National Aeronautics and Space Administration

Educational Service	
Educators	K – University

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NASA CORE

Central Operation of Resources for Educators

Educational Materials Catalog

Worldwide Distribution Center for Aerospace Education Materials

Sponsored by:
National Aeronautics and Space Administration
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and
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15181 Route 58 South
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The NASA CORE Educational Materials Catalog is available in electronic format through NASA Spacelink—one of the Agency's electronic resources specifically developed for use by the educational community.

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About Our Services

The NASA Central Operation of Resources for Educators (CORE), established in cooperation with Lorain County Joint Vocational School, serves as the worldwide distribution center for NASA-produced educational materials. For a minimal charge, CORE will provide a valuable service to educators unable to visit one of the NASA Educator Resource Centers by making NASA educational audiovisual materials available through its mail order service.

Through CORE's distribution network, the public has access to more than 200 videotape, slide, CD-ROM, and DVD programs chronicling NASA's state-of-the-art research and technology. Through the use of these curriculum supplement materials, teachers can provide their students with the latest in aerospace information. NASA's educational materials on aeronautics and space provide a springboard for classroom discussion of life science, physical science, astronomy, energy, Earth resources, environment, mathematics, and career education.

Additional information about CORE can be obtained by calling the CORE office at (440) 775-1400, weekdays between 8 a.m. and 4 p.m. (Eastern Standard Time), or by writing on school letterhead. We also can be reached through our Web site at *http://core.nasa.gov* or by e-mail at *nasaco@leeca.org*

How to Use This Catalog

Materials are listed by subject area and then broken down by media type (i.e., CD-ROM, DVD, etc.). This will enable the educator to research all of our materials available under Earth Science or the librarian to access all of our CD-ROMs or slide programs. Where applicable, we have tried to put more than one title on a videotape, thereby reducing costs for educators. An example would be the 16-part Liftoff to Learning Series available for $48.00, or you can purchase the individual titles for $10.00–$16.00 each.

Preview Sites

NASA's Educator Resource Centers function as an information network serving educators nationwide. These centers are located at each of the NASA Field Centers, selected museums, and universities throughout the United States. Educators can preview audiovisual materials at these centers prior to placing orders through CORE. A listing of the NASA Educator Resource Centers is provided for your convenience at the back of this catalog.

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Special Note

Space technology changes at a rapid pace. The programs in this catalog were current and accurate at the time they were made; later events, however, may have caused some parts to become outdated. The information remains a part of the history of the space program and is available to interested viewers in its present form.

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Further copyright information is available on the Internet at *http://www.nasa.gov/gallery/photo/guideline.html*

	Format	Item No.	Price
Engineers: Turning Ideas Into Reality 8 minutes/1990 Level: Grades 9–Adult	**1/2" VHS**	004.0-06V	$10.00

Offers a series of short commentaries by several engineers on why they chose their particular field of engineering and how they feel it impacts everyday life. Reproduced with permission from the *National Engineers' Week*.

Gate to Gate

Level: Grades 9–College/2001	**CD-ROM** Windows '95/Mac	400.1-32	$5.00

Fasten your seatbelt and get ready for a flight through the U.S. air traffic control system! Gate to Gate, a multimedia CD-ROM, takes you behind the scenes to meet the people who manage air traffic and highlights some of the tools they use every day. From preflight to landing, you will navigate through the phases of a San Francisco to New York flight—becoming familiar with the air traffic management facilities that monitor your flight. NASA Ames Research Center, in cooperation with the Federal Aviation Administration, is developing sophisticated software tools and procedures to assist controllers in managing air traffic more efficiently throughout all phases of flight: pre-flight, takeoff, departure, en route, descent, approach, and landing. Some of these tools are showcased and demonstrated in Gate to Gate. Also included with this informational CD-ROM is the Career Guidance Packet. This downloadable print material introduces high school and community college students to many of the job opportunities available in air traffic management. The print material is designed to enhance the student's experience with the CD-ROM while engaging them in activities similar to the work of controllers.

Journey Into Cyberspace (Six-Part Video Series) 146 minutes/1997 Level: Grades 5–8	**1/2" VHS**	004.0-11V	$24.00

This series was sponsored and co-produced by the Virginia Space Grant Consortium, and was broadcast in October 1997. In the first videotape, Dr. Shelley Canright of the NASA Langley Research Center presents an informal review of the program materials explaining their dual focus: to stimulate career exploration and to provide science-/math-related activities and concepts. The subsequent five programs transport two middle school students magically through their computer to a series of university campuses, including the University of Virginia, the College of William and Mary, Virginia Tech, Old Dominion University, and Hampton University. On their journey, the students enlist the aid of university students as they work on completing a career project for their science class. Each program focuses on university students doing real-world research and covers a variety of careers in the areas of mathematics, science, and engineering. The university students also explain how their ordinary interests have led to extraordinary opportunities in high-tech research and development. Additional science and career resources are available on their Web site at: *http://careerjourney.vsgc.odu.edu*. Copyrighted by the Virginia Space Grant Consortium.

Preparing Today for Your Tomorrow 32 minutes/1988 Level: Grades 4–8	**1/2" VHS**	004.0-03V	$16.00

Covers four students who share what they learned about careers while visiting NASA's Langley Research Facility. Judith Garcia, teacher in space finalist, guides these students through the Langley Research Center to speak with employees in several areas. This tape encourages students to investigate the multitude of career opportunities available to them.

	Format	Item No.	Price
Reaching for the Stars (Astronaut Training Tape)			
13 minutes/1993	**1/2" VHS**	004.0-09V	$15.00
Level: Grades 3–Adult			

Highlights the nonstop training astronauts receive on their way to the launch pad. Surveys the many different jobs astronauts have when they are not in space, including payload planning, launch assistance, mission control, and personal appearances. Copyrighted by the Virginia Space Grant Consortium.

Reaching for the Stars (Five-Part Videoconference Series)			
150 minutes/1993	**1/2" VHS**	004.0-10V	$24.00
Level: Grades 6–12			

Features five young minority and female students discussing their research and academic preparation in science, math, and engineering. Encourages middle and high school students to consider careers in these fields and to prepare themselves academically to take advantage of future workforce opportunities. Includes a teacher's guide and printed support materials. Sponsored by the Virginia Space Grant Consortium, Old Dominion University, Academic Television Services, and NASA. For national distribution only.

Space for Women			
27 minutes/1981	**1/2" VHS**	004.0-01V	$16.00
Level: Grades 9–12			

Examines nontraditional career opportunities for women at NASA. Several dynamic women speak of the challenges they have mastered and the problems they have encountered while pursuing careers in the space and science fields. Narrated by Ricardo Montalban.

Winning: Aerospace—The Next Decade			
21 minutes/1990	**1/2" VHS**	004.0-04V	$16.00
Level: Grades 7–12	1/2" VHS (Spanish Version)	004.0-05V	$16.00

Introduces students to the unique career opportunities in America's aerospace industry. Accompanying teacher's guide, written in English, gives suggestions on how to incorporate the video into mathematics, science, technology, communications, and English curricula. Reproduced with permission from the Aerospace Industries Association. For Spanish version, order 004.0-05V.

	Format	Item No.	Price
Adventures of Echo the Bat, The			
Level: Grades K–4 / 2001	**Publication**	300.1-06P	$6.00 shipping fee

This picture book of Echo the Bat teaches the concepts of remote sensing throughout a story of a young bat lost in Arizona. Pop-up images are incorporated into the satellite images to assist the child in recognizing land features narrated in the story. The book is accompanied by a set of activities that reinforce four basic themes or concepts fundamental to the interpretation of satellite imagery: perspective, shape and pattern, color, and texture. Activities and activity sheets are also provided on a companion Web site: *http://imagers.gsfc.nasa.gov/K-4/index.html*

Arctic Observatory/Sea Ice in the Polar Regions

	CD-ROM	400.0-90	$5.00
Level: Grades 9–Adult	Mac / Windows 3.1 / Windows '95		

The Arctic Observatory interactively addresses Arctic phenomena and processes, allowing students to ask and answer questions about interrelationships among several physical aspects of the Arctic system. A printable teacher's guide is included on the CD. Sea Ice in the Polar Regions describes sea ice classification, observation, and climate impacts. Both resources can be downloaded from *http://www.usra.edu/esse/learnmod.html*

ATLAS 1: Studying Mysteries in Earth's Atmosphere

20 slides with descriptions	**SLIDE**	100.0-38	$8.50
Level: Grades 6–8			

Describes the first Atmospheric Laboratory for Applications and Science (ATLAS) mission dedicated to a better understanding of the physics and chemistry of Earth's atmosphere. Copyrighted by the Essex Corporation.

Blue Planet

42 minutes / 1990	**1/2" VHS**	002.2-15V	$14.95
Level: Grades 4–Adult	**DVD**	002.2-15D	$20.00

Filmed by astronauts from five Space Shuttle missions with the IMAX camera, this film dramatically reveals the forces affecting Earth's fragile ecological balance: volcanoes, hurricanes, earthquakes, and, ultimately, humankind. Copyrighted by the Smithsonian Institution / Lockheed Corporation. For noncommercial private use only.

Earth Observatorium: Mission to Planet Earth

	CD-ROM	400.0-77	$24.00
Level: Grades K–Adult	Mac / Windows 3.1 / Windows '95		

This lets you look out a porthole of the Space Shuttle *Endeavour* during mission STS-68 to view 12,500 images of Earth, plus many of the radar images taken during the flight. A navigation interface lets you view images by timeline, country, geographic location, or photo ID. The astronauts discuss the flight's results in a 16-minute movie. Published and copyrighted by Rocky Mountain Digital Peeks. Volume 2: for Windows 3.1, Windows '95, or Macintosh OS (Sys 7+), this multimedia CD-ROM works best using a 16- or 24-bit color display with 5 MB for the application.

Earth Observing System

25 slides with descriptions	**SLIDE**	100.0-42	$8.50

Presents a variety of images related to the Earth Observing System, the most ambitious science mission ever undertaken. This slide set is part of the Goddard Space Flight Center's Mission to Planet Earth.

	Format	Item No.	Price
Earth Science Elementary Publication Packet Level: Grades K–3	**Print Packet**	002.2-19P	$6.00

The packet includes an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

Earth Science Middle School/Secondary Publication Packet Level: Grades 5–12	**Print Packet**	002.2-20P	$6.00

The packet includes an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

Earth/Space Science Slide Set for Educators 122 slides with descriptions Level: Grades 9–Adult	**SLIDE**	100.0-47	$60.00

Contains slides and documentation on the most recent space-based observations NASA has obtained regarding Earth system science. The slides are organized around seven themes: Clouds and Radiation; Ocean Productivity, Circulation, and Air-Sea Exchange; Greenhouse Gases; Changes in Land Use, Land Cover, Primary Productivity, and the Water Cycle; the Role of Polar Ice Sheets and Sea Level; Ozone Depletion; and the Role of Volcanoes in Climate Change.

Earthlight: Special Edition 85 minutes/1998	**DVD**	002.2-25D	$21.00

Floating hundreds of miles above the Earth, load this disc into your computer or DVD player, sit back, relax, and luxuriate in Earthlight's beautiful digital video and original 5.1 channel instrumental music. You will see the thundering liftoff of Atlantis, the brilliant blue of the Pacific, the majesty of the Himalayas, and the vast red dunes of the Sahara. Earthlight is a hybrid DVD-video and DVD-ROM title that includes breathtaking video of planet Earth from space. It includes 80 minutes of original Dolby Digital music, global location subtitles in 12 languages, now including Chinese, Hebrew, Arabic, and Klingon, high-resolution still images, and a Windows Screen Saver program.

System Requirements: DVD-video player or DVD-ROM system with Pentium 133, 16 MB RAM, SVGA 16-bit 2MB video card, Microsoft Windows '95, 25 MB free disk space on hard drive, MPEG-2 decoder with Dolby Digital Surround Sound, DVD-ROM drive. DVD-equipped MAC will play most program components.

Earthview 4 slides with descriptions	**SLIDE**	100.0-29	$3.00

Presents photographs of Earth taken from four different Apollo missions. Provided by NASA's Public Affairs Office.

	Format	Item No.	Price
Fragile Earth			
25 slides with descriptions	**SLIDE**	100.0-26	$8.50

Focuses on many of the conditions that affect Earth's crust, waters, and atmosphere. Space photographs and satellite images illustrate how both nature and people have changed Earth, and not always for the better. Encourages students to become active participants in restoring our sick and injured Earth to good health. Produced by the Smithsonian.

Full Earth			
6 slides with descriptions	**SLIDE**	100.0-30	$3.50

Offers photographs of Earth taken by satellites and various Apollo missions. Provided by NASA's Public Affairs Office.

Geomorphology from Space: A Global Overview of Regional Landforms			
	CD-ROM	400.0-87	$5.00
Level: Grades 9–Adult / 1986	Mac 7.1 / Windows 3.1 / UNIX		

Offers a CD-ROM version of an out-of-print 1986 NASA publication. This resource is a study of landforms and landscapes, including the description, classification, origin, development, and history of planetary surfaces. The core of the material is a gallery of space imagery consisting of 237 plates, each treating some geographic region where a particular landform theme is exemplified. Commentary, photographs, locator maps, and sometimes a geologic map accompany each plate. A Web version of this CD-ROM is available at *http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html*

Glacier Bay, Alaska from the Ground, Air, and Space			
13 minutes / 1996	**1/2" VHS**	002.2-16V	$15.00
Level: Grades 5–12			

Demonstrates how satellite data can be used to measure glacier changes from space. Also explains how remote sensing can extend the records of historical ground-based measurements to the present. Examines how ground and satellite measurements can be integrated to yield information that may be used in the analysis of regional climate. Available online at *http://sdcd.gsfc.nasa.gov/GLACIERBAY/glacierbay.story.html*

Glacier Power			
	CD-ROM	400.0-89	$5.00
Level: Grades 4–6 / 1997	Mac		

Serves as a curriculum supplement that includes information on glaciers and their importance to climate studies. The CD includes lesson plans, student review exercises, activities, and resources such as glacier imagery, satellite imagery, illustrations, diagrams, and more. Available online at *http://www.asf.alaska.edu:2222/*

GLOBE Program, The			
10 minutes / 1996	**1/2" VHS**	002.2-17V	$10.00
Level: Teachers			

Presents a short overview of the Global Learning and Observations to Benefit the Environment (GLOBE) program. The GLOBE program is a hands-on, international environmental science and education program that links students, teachers, and the scientific research community to learn more about our environment through student data collection and observation. Intended to provide general information for teachers about the objectives and logistics of GLOBE. For more information, visit the GLOBE Home Page at *http://www.globe.gov*

	Format	Item No.	Price
Jason: An Ocean Odyssey 9 minutes/2001 Level: Grades 6–12	**1/2" VHS**	002.2-23V	$10.00

Jason is an oceanography mission to monitor global ocean circulation, discover the tie between the oceans and atmosphere, improve climate predictions, and monitor events such as El Niño conditions and ocean eddies. The Jason-1 satellite carries a radar altimeter, and it is a follow-on mission to the highly successful TOPEX/Poseidon mission. It is a joint mission between France and the U.S.A. The satellite will be launched in late 2000. For more information on the TOPEX/Poseidon mission, visit their Web site at *http://topex-www.jpl.nasa.gov*

Liftoff to Learning: The Atmosphere Below 16 minutes/1992 Level: Grades 5–12	**1/2" VHS**	002.2-14V	$15.00

Shows that changes in Earth's atmosphere are investigated from outer space onboard the Shuttle using the Atmospheric Laboratory for Applications and Science (ATLAS 1). Space Shuttle astronauts explain the questions scientists hope can be answered by studying Earth's atmosphere from space. Experiments discussed in this videotape focus on infrared detection of atmospheric remnants from volcanic eruptions, ozone concentration levels, and incoming solar ultraviolet radiation with respect to global warming, among others.

Live from Antarctica Videoconference Purchase our 4-part series on 2 videotapes 4 hours Level: Grades 6–12	**1/2" VHS**	099.13 V	$40.00

Tape 1
Program 1: The Coldest, Windiest, Iciest Place on Earth
Broadcast December 13, 1994

Introduces and explores the geology, climate, location, scale, and history of the coldest, windiest, highest continent on Earth; one with 70 percent of all the world's fresh water, 90 percent of Earth's ice, and regions drier than the Gobi Desert. Antarctica plays a crucial role in global climate and holds clues to our planet's future. And while today it seems locked into its icy identity, it was once very different, a reminder of how drastic planetary climate changes can be. In this program, students will learn how and why Antarctica has changed over time, how ancient continents formed and broke up, and what Antarctica can reveal about Earth today and in the future.

Program 2: Life in Antarctica, Then and Now
Broadcast December 15, 1994

Shows that as Antarctica changed from a tropical forest, its plants and creatures evolved and adapted or died out. David Harwood and his team go fossil hunting in the Transantarctic Mountains, the site of the most spectacular scenery on the continent. Looks at one of the most interesting contemporary Antarctic life forms, the Emperor penguin, with expert Gerry Kooyman, and one particularly unique adaptation in McMurdo's aquarium—fish with organic antifreeze! Explores one of Antarctica's most unusual areas, the Dry Valleys, where life survives inside rocks or at the bottom of lakes that are perpetually covered by ice. Diane Freckman of biologist Robert Wharton's Long-Term Ecological Research project shows us the ongoing environmental survey underway in the Dry Valleys, as well as what researchers hope to learn through careful observation over many years.

Tape 2
Program 3: Spaceship South Pole
Broadcast January 10, 1995

Shows that surviving at the South Pole is about as good an analogy for living and working in space as can be found anywhere on Earth. The video crew spent the holidays at America's Amundsen-Scott South Pole Station. Students, of course, know what the holiday is like at the North Pole, but this will be a revealing and realistic look at the other end of the planet! Shows what the 150 or so scientists and support staff in residence wake up to on December 24, as well as everyday life and work in some of the most extreme conditions anywhere on Earth. The National Science Foundation (NSF) has begun a total redesign of the South Pole Station, to make it safer, more energy-efficient, and better equipped with telecommunications tools to upgrade support for science. Reveals why the new living modules are raised high on stilts and why all other buildings will be situated "under ice." NASA is collaborating with NSF to make the new station far more self-sufficient in food and water, including ideas for an edible "park"!

Program 4: From Pole to Planet
Broadcast January 19, 1995

Proves that Antarctica is a place to not only study the history of our universe, as shown in Program 3, but also to consider the future of our home planet. Governed by an international treaty and dedicated to peaceful scientific research, Antarctica is a unique resource for all of Earth's people—a "canary in the mine shaft" that can alert us to the consequences of actions that may impact the global climate system. What are we learning from studies of the West Antarctic ice sheet? If climate change is driven to extremes, will the Antarctic ice caps start to melt and flood Earth's coastal cities? Shows what life is like at a 55-person deep field camp, where ice drilling and seismic testing probe what lies beneath the surface. Flying in specially equipped aircraft, scientists try to determine whether volcanic heat drives the ice streams.

Mission EarthBound Videoconference Series

Purchase our 6-part series condensed onto 3 videotapes
6 hours with printed lesson guide / 1994 **1/2" VHS** 099.11 V $60.00

Offers distance-learning programming designed for participants to upgrade content knowledge and instructional skills through an Earth system science investigation relating human influence to global climate change. Serves as both student enrichment and staff development. Through animated vignettes, participants are introduced to the planet Earth and the Earth system from the perspective of two alien students—Baryon and Hadron—on the ultimate science field trip. Viewers accompany Baryon and Hadron in their exploration of specific aspects of global environmental change. In addition, Dr. Joel Levine, a NASA atmospheric science expert, offers viewers additional insight into global change issues engaging in dialog with both studio audiences and telephone viewers.

Program 1: Mission EarthBound
Introduces the notion of global change, defines the term "atmosphere", and provides the foundation for deeper investigation in the remaining programs of the series.

Program 2: Earth's Atmosphere: A Cosmic Perspective
Explores the origin, evolution, and resulting composition and dynamics of Earth's unique atmosphere. Includes contrasts and comparisons with atmospheres that have developed on the other planets of our solar system.

Program 3: Atmospheric Ozone: What Is It and What Is Happening to It?
Describes the function and significance of ozone in safeguarding life on our planetary home. Models the interactions, both natural and human-induced, that result in the creation and destruction of atmospheric ozone.

Program 4: Climate Systems / Climate Modeling
Examines the complex web of interacting variables that give rise to what is known as "climate". Includes historical trends and predictions of future temperatures and sea levels.

Program 5: Green House Gasses/Climate Change
Investigates the origin and role of greenhouse gasses that generate the Earth-warming greenhouse effect. Includes computer database modeling and the upbeat "Global Challenge" music video.

Program 6: Challenges/Solutions to Global Atmospheric Change
Briefly summarizes content provided in Programs 1–5 and addresses the impact on global change of political, social, and economic action and education from a worldwide perspective.

NASA CONNECT Video Series/1999–2000
Program 2: Measurement of All Things: Atmospheric Detectives
30 minutes/1999 **1/2" VHS** 099.21-02V $10.00
Level: Grades 4–8 CLOSED CAPTIONED

Produced by NASA Langley Research Center's Office of Education, this is the second of seven programs in the 1999–2000 NASA CONNECT series. CONNECT is designed to enhance the teaching of math, science, and technology in grades 4–8 using aeronautics and space technology as its organizing theme. In this program, students learn how scientists use satellites, lasers, optical detectors, and wavelengths of light to measure the presence of certain gaseous elements, compounds, and aerosols in the Earth's atmosphere.

Our Water Planet from Space: NASA . . . On the Cutting Edge Videoconference
60 minutes/1998 **1/2" VHS** 002.2-21V $16.00
Level: Grades 5–12

Program 1: Oceans in Motion
This program explains how ocean circulation not only affects life in the oceans but also weather and climate around the world. It also examines how NASA and its partners use the vantage point of space to measure oceans' height, winds, and temperature. Broadcast date: October 21, 1998.

Program 2: The Color of Oceans
This program looks at the oceans' many shades of blue, green, and red. This spectrum of color tells us a lot about the health of our oceans, which affects life on Earth. NASA's ocean-color observations from space provide a big picture of how healthy our oceans are and the role oceans play in global change. Broadcast date: October 22, 1998.

Real Reasons for Seasons, The
Book w/CD-ROM 002.2-24P $6.00
Level: Grades 6–8/2001 Windows '95/Mac

This guide was developed through a partnership between the U.C. Berkeley Lawrence Hall of Science's Great Explorations in Math and Science Program (GEMS) and NASA's Sun-Earth Connection Education Forum. This GEMS guide is aimed at helping students arrive at a clear understanding of seasons as they investigate the connections between the Sun and Earth. Along the way, students take a "Trip to the Sun", determine the real shape of the Earth's orbit, evaluate actual data on world temperature and hours of sunlight in different locations, and model how the angle at which sunlight hits the Earth affects its concentration. Throughout these engaging activities, students gain important standards-based science and mathematics content, and develop abilities essential in scientific investigation. A CD-ROM, included in this guide, offers a rich collection of helpful resources from NASA and other sources, Web links, and software programs. One of the software programs included is "Seasons", created by Riverside Scientific in St. Paul, Minnesota, which is a very powerful modeling system that allows you to change the Earth's orbit and the tilt of the Earth's axis and then predict how these changes will affect the seasons. Also available online at *http://www.lhs.berkeley.edu/GEMS/GEMSSeasons.html*

	Format	Item No.	Price
Remote-Sensing Tutorial Level: College and Remote-Sensing Professionals / 1999	**CD-ROM**	400.0-93	$5.00

Remote sensing involves the use of instruments or sensors to "capture" the spectral and spatial relationships of objects and materials observable at a distance, typically from above them. This tutorial will help the viewer understand how remote sensing is applied to studying the land, sea, and air making up the environments of our planet. It is intended to inform both professionals and the general public about the principles and achievements of remote sensing, with emphasis on applications already demonstrated, and to point to the anticipated functions and benefits of Earth science initiatives. The program uses Landsat, SPOT, and several radar systems to provide most of its examples of commonly used space imagery. The CD-ROM is current as of January 1999 and does not contain the latest version available on the Web site at *http://rst.gsfc.nasa.gov*

Spaceborne Imaging Radar—Seeing the Earth in a New Way

	CD-ROM	400.0-75	$6.00
Level: Grades 5–12 / 1995	Mac / Windows 3.1 / Unix		

Contains radar images of sites around the world as seen before and during the SIR-C missions of 1994. The CD-ROM contains handheld photographs from the Space Shuttle, QuickTime movies from the missions, and photographs from the ground. Using captivating examples such as the mountain gorilla habitats of Rwanda, a radar-generated flyby of the Galapagos Islands, the discovery of the Lost City of Ubar in the Arabian desert, and many others, the CD-ROM puts our Earth at students' fingertips. Teachers may use the CD-ROM in many ways, from activities as simple as viewing pictures or as complicated as performing science experiments with real data taken from Earth orbit. Students can learn about NASA's Mission to Planet Earth and imaging radar through the structured lesson plans or think up their own experiments and analyze radar image data from the SIR-C missions. This CD-ROM includes the Netscape World Wide Web browser interface. If your computer has Internet access, there are links provided to a companion "Home Page" to this CD-ROM, as well as to other NASA educational resources. The CD-ROM, produced by NASA's Jet Propulsion Laboratory, was designed for use by students at middle schools, high schools, and colleges. It was especially prepared for PC-compatible computers; however, it is ISO-9660 compliant, which means it is readable on Macintosh and Unix machines. Visit the Web site at *http://southport.jpl.nasa.gov/html/cdrom.html*

Sun Splash Ozone Video 8 minutes / 1997 Level: Grades 9–12	**1/2" VHS**	002.2-18V	$10.00

Uses computer graphics and animation to illustrate ozone depletion, explains how ozone in the stratosphere protects us from ultraviolet radiation, and demonstrates how chlorofluorocarbons (CFCs) cause destruction of Earth's protective ozone layer.

Sun-Earth Day Kit Level: Grades K–12	**Print Packet**	002.2-22P	$6.00

There are 7–10 educational products in the packet meant to support and provide additional knowledge for those participating in Sun-Earth Day. For additional information, visit their Web site at *http://sunearth.gsfc.nasa.gov/SunEarthDay*. The packet will include an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

	Format	Item No.	Price
TOPEX/POSEIDON: A Mission to Planet Earth			
9 minutes/1992	**1/2" VHS**	002.2-13V	$10.00
Level: Grades 9–Adult			

Explains the objectives of the joint U.S./French mission dedicated to the study of the circulation of Earth's oceans. This satellite will vastly improve our understanding of the ocean's role in global climate change and lay the foundation for long-term ocean monitoring from space.

Visit to an Ocean Planet

	CD-ROM	400.0-92	$5.00
Level: Grades 5–12/1998	Windows 3.1/Windows '95/Mac		

Interactive, educational CD-ROM that reveals the importance of our oceans to global climate and life. Allows users to explore the Gulf of Mexico with satellite data, investigate the 1997–1998 El Niño, discover "what's up" with Earth-orbiting satellites, and learn about the research activities of real-life oceanographers. The curriculum background materials are arranged in the context of widely accepted teaching themes. The CD-ROM also highlights results from the TOPEX/Poseidon project. Copyright 1998, California Institute of Technology and its licensors. U.S. Government sponsorship acknowledged. All rights reserved. For more information, visit their Web site at *http://topex-www.jpl.nasa.gov/education/cdrom.html*

Volcanoes of Hawaii and the Planets

20 slides with descriptions	**SLIDE**	100.0-41	$8.00
Level: Grades 9–Adult			

Compares landforms in Hawaii and on the planets. Prepared for the Hawaii Space Grant College by Peter J. Mouginis-Mark.

	Format	Item No.	Price
Hurricane Below 15 minutes/1974 Level: Grades 7–10	**1/2" VHS**	002.3-01V	$15.00

Presents the plight of a commercial fishing vessel caught in the path of a killer hurricane. Dramatically depicts the birth of Hurricane Mimi off the coast of Africa and traces its growth and development as it brings destruction to the Central Atlantic States. These events are powerfully portrayed against the successful efforts of the crew of the dragger *Dante* to escape by navigating around the center of the storm with the aid of modern technology, ship-to-shore communications, and early-warning weather satellites monitoring the "hurricane below".

NASA CONNECT Video Series/1998–1999
Program 1: Plane Weather

30 minutes/1998 Level: Grades 4–8	**1/2" VHS**	099.20-01V	$16.00

Involves students in the examination of aviation safety. Introduces students to the math and science behind aviation weather, and demonstrates how meteorological conditions, such as icing, influence flight. Students explore the relationship between science and technology and the tools, techniques, and technologies used by engineers to study aircraft icing to reduce its effect on aircraft operations. Includes an educator's guide.

NASA CONNECT Video Series/2000–2001
Program 4: Data, Analysis, and Measurement: Ahead, Above the Clouds

30 minutes/2001 Level: Grades 5–8	**1/2" VHS** CLOSED CAPTIONED	099.22-04V	$10.00

The fourth of five programs in the 2000–2001 NASA CONNECT series. Produced by the NASA Langley Research Center's Office of Education. In this episode of NASA CONNECT, students will learn about hurricanes and how meteorologists, weather officers, and NASA researchers use measurement and data analysis to predict severe weather such as hurricanes. Students will also discover how the Geostationary Imaging Fourier Transform Spectrometer (GIFTS) will enable people to avoid the loss of life and property by warning them of approaching hazardous weather. Students will observe meteorologists interpreting graphs to predict hurricanes. By conducting classroom and online activities, students will make connections between NASA research and the mathematics, science, and technology they learn in their classroom. Broadcast: March 15, 2001.

NASA "Why?" Files Video Series/2001–2002
Program 1: The Case of the Mysterious Red Light

60 minutes/2001 Level: Grades 3–5	**1/2" VHS** CLOSED CAPTIONED	002.3-04-V	$16.00

In "The Case of the Mysterious Red Light", the tree house detectives accept the challenge of trying to find the cause of the unusual red sunrises and sunsets in their community. They use scientific inquiry and Problem-Based Learning to learn about light, volcanoes, and weather. The tree house detectives get a little help from the famous magician, Franz Harrary, who helps them to understand that "seeing is not always believing!" A NASA "Why?" Files Kids' Club third-grade classroom in Hampton, VA, tells the tree house detectives about the three types of volcanoes, giving them a valuable clue to the mystery of the red sunrises and sunsets. Community experts and NASA researchers also help the tree house detectives "dust off" their thinking caps to realize that the case may "erupt" before their very eyes.

	Format	Item No.	Price
Tornado Below 14 minutes/1975 Level: Grades 7–10	**1/2" VHS**	002.3-03V	$15.00

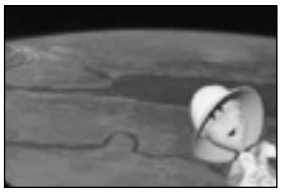
Presents the story of a student pilot's narrow escape from the path of a tornado. This program details the formation of tornados, their destructive capabilities, and the important role early-warning weather satellites play in predicting severe weather.

Weather Watchers, The 15 minutes/1977 Level: Grades 7–11	**1/2" VHS**	002.3-02V	$15.00

Dramatically explains the importance of meteorological information obtained from NASA satellites for predicting and monitoring severe storms. Presents unusual footage of the formation of a tornado and its destructive force.

	Format	Item No.	Price

Liftoff to Learning: Geography From Space
15 minutes/1997 **1/2" VHS** 008.0-09V $15.00
Level: Grades K–8
Application: Earth and Space Science, Life Science in Personal and Social Perspectives



Takes the viewer on a rapid tour of Earth's surface as seen from outer space. After explaining how the altitude of the viewer affects the amount of Earth's surfaces seen at one time, the video moves into a travelogue on some of the interesting features of Earth's continents as seen from space. Because the inclination of the Space Shuttle's orbit to Earth's equator did not carry the crew over Antarctica or the Arctic, these regions are not visited in the program.

Live From Antarctica Videoconference
Purchase our 4-part set on 2 videotapes
4 hours **1/2" VHS** 099.13 V $40.00
Level: Grades 6–12

Tape 1
Program 1: The Coldest, Windiest, Iciest Place on Earth
Broadcast December 13, 1994

Introduces and explores the geology, climate, location, scale, and history of the coldest, windiest, highest continent on Earth; one with 70 percent of all the world's fresh water, 90 percent of Earth's ice, and regions drier than the Gobi Desert. Antarctica plays a crucial role in global climate and holds clues to our planet's future. And while today it seems locked into its icy identity, it was once very different, a reminder of how drastic planetary climate changes can be. In this program, students will learn how and why Antarctica has changed over time, how ancient continents formed and broke up, and what Antarctica can reveal about Earth today and in the future.

Program 2: Life in Antarctica, Then and Now
Broadcast December 15, 1994

Shows that as Antarctica changed from a tropical forest, its plants and creatures evolved and adapted or died out. David Harwood and his team go fossil hunting in the Transantarctic Mountains, the site of the most spectacular scenery on the continent. Looks at one of the most interesting contemporary Antarctic life forms, the Emperor penguin, with expert Gerry Kooyman, and, in McMurdo's aquarium, one particularly unique adaptation—fish with organic antifreeze! Explores one of Antarctica's most unusual areas, the Dry Valleys, where life survives inside rocks or at the bottom of lakes that are perpetually covered by ice. Diane Freckman, of biologist Robert Wharton's Long-Term Ecological Research project, shows us the ongoing environmental survey underway in the Dry Valleys, as well as what researchers hope to learn through careful observation over many years.

Tape 2
Program 3: Spaceship South Pole
Broadcast January 10, 1995

Shows that surviving at the South Pole is about as good an analogy for living and working in space as can be found anywhere on Earth. The video crew spent the holidays at America's Amundsen-Scott South Pole Station. Students, of course, know what the holiday is like at the North Pole, but this will be a revealing and realistic look at the other end of the planet! Shows what the 150 or so scientists and support staff in residence wake up to on December 24, as well as everyday life and work in some of the most extreme conditions anywhere on Earth. The National Science Foundation (NSF) has begun a total redesign of the South Pole Station to make it safer, more energy-efficient, and better equipped with telecommunications tools to upgrade support for science. Reveals why the new living modules are raised high on stilts and why all other buildings will be situated "under ice." NASA is collaborating with NSF to make the new station far more self-sufficient in food and water, including ideas for an edible "park"!

	Format	Item No.	Price

Program 4: From Pole to Planet
Broadcast January 19, 1995

Proves that Antarctica is a place to not only study the history of our universe, as shown in Program 3, but also to consider the future of our home planet. Governed by an international treaty and dedicated to peaceful scientific research, Antarctica is a unique resource for all of Earth's people—a "canary in the mine shaft" that can alert us to the consequences of actions that may impact the global climate system. What are we learning from studies of the West Antarctic ice sheet? If climate change is driven to extremes, will the Antarctic ice caps start to melt and flood Earth's coastal cities? Shows what life is like at a 55-person deep field camp, where ice drilling and seismic testing probe what lies beneath the surface. Flying in specially equipped aircraft, scientists try to determine whether volcanic heat drives the ice streams.

Mission Geography

	CD-ROM	400.1-37	$5.00
Level: Grades K–12/2001	Mac/Windows '95		

Mission Geography is learning modules designed to link the content, skills, and perspectives of geography with NASA's missions and results at three grade levels: K–4, 5–8, and 9–12. The key skills and techniques of geography and other sciences are used in each module to model the approaches used by scientists to explore Earth from both the ground and from space. Each module is divided into individual investigations and is supported by a Web site, *http://missiongeography.org*. Mac Power PC (OS 7.5.3 or later for Acrobat) with 6 MB of RAM for Acrobat or i486, or Pentium processor-based personal computer with CD-ROM drive (Windows 95 or later) with 16 MB of RAM for Acrobat, or modules may be downloaded by investigations in PDF format from *http://missiongeography.org*

Underground Railroad: Connections to Freedom and Science

34 minutes/1999	**1/2" VHS**	008.0-10V	$16.00
Level: Grades 6–12			

In July 1998, President Clinton signed a bill into law that would recognize and preserve the Underground Railroad, the South/North escape routes used by freedom-seeking slaves during the 19th century. Specifically, the law authorized the National Park Service to physically link the Railroad's "safe houses", to produce educational materials about the Railroad, and to otherwise commemorate this important part of our Nation's history. This fascinating video is the result of a collaboration between the National Park Service and NASA educational resources. Slaves traveling the Underground Railroad, usually on foot, depended on celestial navigation to find their way northward. They continually looked to the Big Dipper and the North Star for direction. The purpose of this video is to increase student awareness of the Underground Railroad and the role celestial navigation played in the Railroad's success. The video also highlights the importance of modern Global Information System technology in reconstructing historical topographies and finding the exact route of the Railroad. By combining amazing historical factors, such as the use of handmade quilts for communication with mathematics, remote-sensing technology, Earth system science, and astronomy, the video presents a dynamic educational experience that is broadly cross-curricular.

	Format	Item No.	Price

United States Geography: Appalachians, Ohio River Valley, Great Lakes
20 slides with descriptions **SLIDE** 100.0-50 $10.00
Level: Grades K–Adult

Offers photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains. The list accompanying each set contains the photo number by which additional prints can be ordered.

United States Geography: East Coast States, New England to Florida
20 slides with descriptions **SLIDE** 100.0-49 $10.00
Level: Grades K–Adult

Presents photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains. The list accompanying each set contains the photo number by which additional prints can be ordered.

United States Geography: Great Plains and Mississippi River Valley
20 slides with descriptions **SLIDE** 100.0-51 $10.00
Level: Grades K–Adult

Shows photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

United States Geography: Rocky Mountains and Southwest
20 slides with descriptions **SLIDE** 100.0-52 $10.00
Level: Grades K–Adult

Offers photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

United States Geography: United States Cities
60 slides with descriptions **SLIDE** 100.0-54 $26.00
Level: Grades K–Adult

Shows photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

United States Geography: West Coast States, Alaska, and Hawaii
20 slides with descriptions **SLIDE** 100.0-53 $10.00
Level: Grades K–Adult

Presents photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

	Format	Item No.	Price
Aeronautical Oddities 17 minutes/1979 Level: Grades 7–Adult	**1/2" VHS**	001.0-11V	$15.00

Documents with old news reveal the successes and failures of early aviation oddities, including a windmill plane, flying barrel, spindle plane, potato bug, tailless airplane, aerobike, ornithopter, sky-car, rocket glider, and more.

Aeronautics: A History of Flight 46 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-01	$13.00

Views flight from the earliest ideas to the latest airplanes. Chronicles aviation from ancient Chinese kites to the modern airplane.

Aeronautics: Principles of Flight 70 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-02	$18.50

Explains aerodynamics in detail.

America's Wings 28 minutes/1976 Level: Grades 9–Adult	**1/2" VHS**	001.0-01V	$16.00

Discusses aerodynamics and airplane wing design. Presents commentaries from key research personnel whose contributions were historically significant in the development of the modern airplane wing—Igor Sikorsky, who invented the helicopter; James Osborne, whose small suggestion helped make jet transports flyable; Eastman Jacobs, whose wind tunnel work in the 1930s established the shape of airfoils; Adolph Busemann, who thought of the swept wing; Kelly Johnson, who designed 40 airplanes; and Richard Whitcomb, who conceived the idea for the supercritical wing, the "coke-bottle" fuselage, and the winglet.

Exploring Aeronautics	**CD-ROM**	400.0-91	$5.00
Level: Grades 5–8	Mac/Win 3.1/Win '95		

Offers an introduction to aeronautics, covers the fundamentals of flight, contains a historical timeline, examines different types of aircraft, and teaches students to use the tools of aeronautics used by researchers to test aircraft designs. For more information, visit the Web site at *http://exploringaerospace.arc.nasa.gov*

	Format	Item No.	Price
Flying Machines			
28 minutes/1978	**1/2" VHS**	001.0-04V	$16.00
Level: Grades 9–Adult	1/2" VHS	001.0-05V	$16.00
	OPEN CAPTIONED		

Examines aviation as it exists today and the technological advances that will impact aviation in the future. The tape briefly describes wind tunnels, power plants, safety, comfort, economy, and noise abatement. NASA aeronautical research has answered some tough questions and is looking forward to solving current problems innovatively.

Gate to Gate			
	CD-ROM	400.1-32	$5.00
Level: Grades 9–College/2001	Windows '95/Mac		

Fasten your seatbelt and get ready for a flight through the U.S. air traffic control system! Gate to Gate, a multimedia CD-ROM, takes you behind the scenes to meet the people who manage air traffic and highlights some of the tools they use every day. From preflight to landing, you will navigate through the phases of a San Francisco-to-New York flight, becoming familiar with the air traffic management facilities that monitor your flight. NASA Ames Research Center, in cooperation with the Federal Aviation Administration, is developing sophisticated software tools and procedures to assist controllers in managing air traffic more efficiently throughout all phases of flight—preflight, takeoff, departure, en route, descent, approach, and landing. Some of these tools are showcased and demonstrated in Gate to Gate. Also included with this informational CD-ROM is the Career Guidance Packet. This downloadable print material introduces high school and community college students to many of the job opportunities available in air traffic management. The print material is designed to enhance the student's experience with the CD-ROM while engaging them in activities similar to the work of controllers.

History of Space Flight: Reaching for the Stars			
89 minutes/2001	**DVD**	007.0-05D	$21.00
Level: Grades 4–12			

Learn of the remarkable vision of rocket pioneer Wernher von Braun and other gifted men who worked in the early 1950s to lay the first serious plans for space travel. Features the amazing picture and sound quality that only DVD can offer, and one of the most extensive collections of historical footage, rare images, and computer animation ever assembled. From ancient Chinese rockets to Mercury, Gemini, Apollo, and the Shuttle, from the science fiction of Jules Verne to the reality of exploring distant planets, you'll view space flight as never before. Peer into the future of space travel with the latest computer animation of tomorrow's space flight concepts. Copyrighted by Finley-Holiday Films.

System Requirements: DVD-video player or DVD-ROM system with Windows '95/'98 or later, Macintosh System 7.5, OS 8/9 or later.

Man's Reach Should Exceed His Grasp, A			
23 minutes/1972	**1/2" VHS**	001.0-03V	$16.00
Level: Grades 4–9			

Presents the story of flight and our reach for new freedom through aviation and the exploration of space. From the Wright Brothers' flight at Kitty Hawk to the landing on the Moon and future missions to the planets, the tape depicts the fulfillment of the ancient dream of flight. Through the use of multiple images, the creative role of research is emphasized. Voices of scientists and statements by writers, poets, and philosophers document our search for knowledge. Narrated by Burgess Meredith.

	Format	Item No.	Price
Milestones of Flight 25 minutes/1988 Level: Grades 4–10	**1/2" VHS**	001.0-07V	$16.00

Produced by the National Air and Space Museum and based on the museum's "Milestones of Flight" gallery, this video traces the history of flight from Langley's first attempts to the Space Shuttle. Uses live footage from many history-making events.

Milestones of Flight 38 slides with descriptions	**SLIDE**	100.0-25	$11.00

Shows scenes from the National Air and Space Museum's "Milestones of Flight" gallery. Produced by the Smithsonian Institution.

NASA and the Airplane 13-Part Series Purchase our 13-part series condensed onto 4 videotapes 6 1/2 hours Level: Grades 9–Adult	**1/2" VHS**	099.05 V	$60.00

NASA and the Airplane Individual Program Descriptions

Program 1: Golden Days of Flight (Paul Garber Interview)/1981
Traces the first days of powered flight. Narrated by Paul Garber, an aeronautical pioneer.

Program 2: America's Wings/1976
Discusses aerodynamics and airplane wing design. Presents commentaries from key research personnel whose contributions were historically significant in the development of the modern airplane wing: Igor Sikorsky, who invented the helicopter; James Osborne, whose small suggestion helped make jet transports flyable; Eastman Jacobs, whose wind tunnel work in the 1930s established the shape of airfoils; Adolph Busemann, who thought of the swept wing; Kelly Johnson, who designed 40 airplanes; and Richard Whitcomb, who conceived the idea for the supercritical wing, the "coke-bottle" fuselage, and the winglet.

Program 3: The 60s' Strides Toward the Future/1984
Views one of the most progressive decades of the century for aeronautics. Details the use of wind tunnels for research and development.

Program 4: X-15 Research/1966
Examines the remarkable half-plane, half-rocket and includes dramatic photography of flights to the edge of space.

Program 5: Quieter, Faster, and Safer Aircraft/1984
Describes NASA projects to reduce jet engine noise, develop planes that can travel faster, and improve aircraft safety.

Program 6: Hang Gliders, Copters, and Underwater Planes/1984
Highlights research to decrease the number of air crashes with dramatic film. Includes land- and sea-based research, as well as airborne experiments.

Program 7: Flying Machines/1978
Examines aviation as it exists today and the technological advances that will impact aviation in the future. The tape briefly describes wind tunnels, powerplants, safety, comfort, economy, and noise abatement. NASA aeronautical research has answered some tough questions and is looking forward to solving current problems innovatively.

Program 8: Looking Ahead and Back /1984
Provides a look at the future and what it may hold for NASA, as well as a look at past accomplishments.

Program 9: Setting the Stage for the Future/1984
Presents several NASA projects scheduled for the duration of the 1980s. Airplane computers and the XV-Tiltrotor are two of the subjects discussed.

Program 10: Behind the Scenes at the Air and Space Museum/1984
Discusses the development of the Smithsonian's National Air and Space Museum in Washington, DC. Presented by E. T. Wooldridge, director of aeronautics at the National Air and Space Museum.

Program 11: Progress in Aeronautics/1984
Examines how NASA works to improve aircraft performance and safety. By using computer technology, physical sciences, testing, and human ingenuity, NASA continues to make aircraft safer, faster, and more economical.

Program 12: The Ames Research Fleet/1984
Describes how various NASA Ames Research Center aircraft are used for research in the fields of astronomy and Earth studies.

Program 13: Astounded at the Past/1987
Provides a montage of aviation research and technology development. Aircraft research has come a long way since the Wright Brothers and Kitty Hawk. Possible advantages in fuel saving and speed may be embodied in future commercial airliners with advanced high-speed propellers and smaller swing-wing aircraft.

NASA CONNECT Video Series/1997–1998

2 hours

Level: Grades K–4	**1/2" VHS**	099.18 V	$24.00
Level: Grades 5–8	**1/2" VHS**	099.19 V	$24.00

Consists of four 30-minute interactive programs delivered to K–4 and 5–8 audiences. The four programs are preceded by an introduction designed to orient teachers to the CONNECT series. Each program in the series will feature one of the four NASA Strategic Enterprises: Aeronautics and Space Transportation Technology, Earth Science, Human Exploration and Development of Space, and Space Science. It is this content that drives the uniqueness of the CONNECT programs. Includes an educator's guide. Series objectives include:

1. Demonstrate the connection between the concepts and skills taught in the classroom and their application in the workplace.
2. Address specific national mathematics standards and support State curriculum frameworks and standards.
3. Actively engage students in problem solving, mathematical reasoning, and the communication of mathematics.
4. Build activities within the program's design that encourage students to apply mathematical operations involving number sense and numeration, measurement, statistics and probability, patterns, and relationships.

Introduction: Teacher's Guide to the Series

This teacher's introduction explains the program's components and suggests ways for teachers to "connect" to NASA to experience exciting research firsthand.

Program 1: Flight Direction
Demonstrates that NASA engineers and pilots constantly experiment with test designs and materials to make the best airplanes. Their experiments are done over long periods of time. They change their experiments by varying the conditions. In this program, students will be introduced to and learn from

former NASA test pilot Lee Person. They will observe students conducting a paper airplane experiment under different flight conditions. By working in pairs or small groups, viewers will better understand how research teams of NASA engineers, technicians, and pilots must work together to complete large projects involving airplanes.

Program 2: Planetary Landers
Helps students explore the design considerations that go into constructing a planetary lander and examine the mathematics behind the landing process. They will observe students conducting an experiment to investigate mass and velocity, in which different objects are dropped onto a "Martian" surface. By working in pairs or small groups, viewers will better understand how research teams of NASA scientists, technicians, and engineers must work together to complete large projects involving planetary landers.

Program 3: Earth from Space
Helps students explore how scientists have used satellites to study the impact of human activities on the global climate and examine the mathematics behind the collected data from space-based instruments to study Earth's environment. Students will observe student researchers conducting an experiment to investigate the differences in distances traveled by rubber-band rockets when the launch angle and the amount of force vary. By working in pairs or small groups, viewers will better understand how research teams must work together to conduct investigations.

Program 4: Doing More in Less
Helps students explore the concept of microgravity. Students will observe student researchers conducting an experiment to investigate the effects of varying the amount of fuel (fizzing antacid tablets) on the difference in time from fuel ignition to landing. By working in pairs or small groups, viewers will better understand how research teams must work together to conduct investigations.

NASA CONNECT Five-Part Video Series/1998–99

Purchase our 5-part series condensed onto 2 videotapes
150 minutes/1999 **1/2" VHS** 099.20 V $24.00
Level: Grades 4–8

NASA CONNECT 1998–99 is a series of five interactive 30-minute instructional programs that use NASA projects, facilities, and researchers to enhance the teaching of math and science for students in grades 4–8. NASA CONNECT links math and science concepts and skills to the workplace, joins classrooms with NASA researchers, and supports national math and science standards. Each program includes a lesson, a classroom experiment, and a Web-based, online, interactive component. Purchase as a complete set or individually as listed below:

Introduction: Teacher's Guide to the Series
This teacher's introduction explains the program's components and suggests ways for teachers to "connect" to NASA to experience exciting research firsthand.

NASA CONNECT 1998–99 Individual Program Descriptions

Program 1: Plane Weather
Involves students in the examination of aviation safety. Introduces students to the math and science behind aviation weather and demonstrates how meteorological conditions, such as icing, influence flight. Students explore the relationship between science and technology, and the tools, techniques, and technologies used by engineers to study aircraft icing to reduce its effect on aircraft operations. Includes an educator's guide.

Program 2: The Shape of Flight
Introduces students to the wind tunnel and the computer, two of the tools used by aeronautical engineers to measure the fundamental design characteristics of experimental and production aircraft. The lesson and classroom experiment will involve students in observation, measuring, organizing, comparing, and interpreting data. Includes an educator's guide.

Program 3: Wherever You Go, There You Are
Introduces students to the science of navigation and involves them in observing, measuring, and interpreting data to determine exact locations. NASA researchers will show students how math, science, and geography combine to make navigating safer and easier. Students will see how various professionals involved in the science of navigation require the use of math, science, and geography to get from one destination to another. They will learn how Global Positioning Satellites (GPSs) now make navigation much easier and safer for civil, commercial, and military pilots. Students will plot a course by using a compass, a compass rose, and a transit. They will be actively involved in organizing, comparing, and interpreting data. Includes an educator's guide.

Program 4: Recipes for the Future
"Recipes for the Future" focuses on the physical properties of materials, mixtures, and compounds. Students are introduced to the various measuring and testing techniques used to develop "composite" materials for airplanes and space vehicles. NASA researchers will show students how recipes for the future begin with the identification of requirements, the selection of proper ingredients, and the application of proper processing, fabrication, and analysis procedures. Students will conduct an experiment designed to investigate the strength and maximum deflection of a composite material with and without the use of a reinforcer.

Program 5: Quieting the Skies
NASA engineers and scientists are trying to design airplanes to run as quietly as cars. In this program, students will learn the basics: what sound is, what makes sound, how sound affects us and the environment, and how we measure sound. They will also learn some of the techniques being used by NASA to reduce aircraft noise. The lesson and classroom experiment will involve students in the creation, visualization, and measurement of sound.

Reduced Gravity Program
9 minutes/1990 **1/2" VHS** 001.0-12V $10.00
Level: Grades 9–Adult

Shows how NASA's KC-135 turbo-jet aircraft provides the scientific community with a weightless research environment. Highlights the types of experiments frequently conducted and explains the flight pattern the "Weightless Wonder" uses to create a zero-gravity environment.

Test Flights Beyond the Limits
150 minutes/1999 **1/2" VHS** 001.0-13V $24.00
Level: Grades 7–Adult

Presents an entertaining and compelling story of the world of flight test and research. Three 47-minute programs combine exciting aerial footage of unique research aircraft and insightful interviews with pilots and engineers to tell the inspiring and sometimes dangerous story of flight research.

Program 1: Flights of Discovery
From the X-15 to testing of the new X-33 engine, learn what drives NASA's modern-day explorers to go beyond tragedy, to find answers, and to push the edges of flight where no one has gone before.

Program 2: The Need for Speed
Witness how pilots and crews meet the challenges of supersonic flight with planes such as the X-1 and SR-71, and explore the new technologies of the X-43 and high-speed civil transport, which may open a new world of unprecedented speed.

Program 3: The New Frontier
Experience how current computer technology is changing how we fly. From the radical looking X-29 to the amazing thrust vectoring X-31, explore how computer developments can improve safety and deliver undreamed-of performance.

	Format	Item No.	Price
Transformations of Flight 5 minutes / 1989 Level: Grades K–3	**1/2" VHS**	001.0-09V	$10.00

Presents 10 important air- and spacecraft in the history of flight. Serves as an intriguing invitation to explore the history of aviation from the Wright Brothers' flight to the Space Shuttle program. This animated videotape successfully complements the "Transformations of Flight" slide set. Includes a lesson guide. Produced by the Smithsonian Institution.

Transformations of Flight 66 slides with descriptions Level: Grades K–3	**SLIDE**	100.0-32	$22.00

Presents the numbers 1 through 10 being transformed into 10 different important air- and spacecraft in the history of flight. These slides successfully complement the videotape. Produced by the Smithsonian.

X-15—The NASA Mission Reports	**Book w/CD-ROM**	400.2-13	$21.95
Level: Grades 9–Adult / 1999	Windows		

The history of aviation in the 20th century is filled with remarkable accomplishments. None more remarkable than the world's first winged spacecraft. From 1957 to 1975, the United States and the Soviet Union played a high-stakes game as they put crew after crew atop barely perfected missiles and hurled them further and further a field. In 1952, long before Sputnik, the NACA, along with the United States Air Force and Navy, was determined to build an aircraft that would be capable of reaching into outer space. While the rest of the world continued to fly around in propeller-driven aircraft, North American Aviation of California constructed a one-seater bullet powered by a rocket engine with unparalleled thrust. When the craft was unveiled in 1958, the hypersonic vehicle was as bold as anything ever attempted in the history of flight. From 1959 to 1968, the three X-15s would carry 12 daring test pilots to the fringes of space and bring them back nearly 200 times. With the notable exception of the Space Shuttle, the X-15 is the only manned, winged vehicle to go into space repeatedly and return to its point of origin. It is rarely noted that a mere four months after John Glenn became the first American in orbit, Major Robert White took the X-15 into space and then flew his vehicle back to a runway at Edwards Air Force Base. Thanks to the engineers and to the ace pilots who flew the X-15, mountains of new information about hypersonic flight were uncovered. Much of this research was then successfully applied to Mercury and Apollo. An often forgotten part of the super-powers' competition, the unique black vehicle, flying high above the deserts of California and Utah, consistently broke every record in the book. Today many of those records still stand. In X-15—The NASA Mission Reports, extremely rare documents from this amazing program are brought together for the first time. The CD-ROM includes hundreds of images and hours of rare video of the X-15 program, including footage of the "pink" X-15A-2; the dramatic explosion of the XLR-99 engine; comments from Joe Walker and Scott Crossfield; Pete Knight's record-breaking high-speed flight; Neil Armstrong's final flight before joining the Astronaut corps; rare silent footage of the first six research pilots; an exclusive interview with X-15 pilot William Dana; the complete documentation of every X-15 flight, including flight plans, surface-to-air transcripts, and post-flight reports in the pilots' own words; a unique interactive virtual reality model of the X-15; and more.

X-15: 1960–1980, The 5 minutes / 1980 Level: Grades 9–Adult	**1/2" VHS**	001.0-10V	$10.00

Examines the prominent features of the rocket-powered X-15 research airplane. Briefly discusses how the X-15 was the forerunner to the Space Shuttle.

	Format	Item No.	Price
Apollo 7—The NASA Mission Reports			
	Book w/CD-ROM	400.2-12	$16.95
Level: Grades 9–Adult/1999	Windows		

On October 1968, the United States manned space program was about to be reborn. An entirely new space vehicle awaited its pilots at Pad 34. After 21 months, the three-man Apollo space capsule had undergone a transformation. Over 1,300 modifications had been made to the spacecraft following the tragic fire which had claimed the lives of the Apollo 1 crew. Now the three men who had lost their friends on that ill-fated mission were faced with the task of flying an all-new space vehicle. It was to be the first manned flight of America's lunar spacecraft, and it was to be first manned launch of Wernher von Braun's giant Saturn IB rocket. The prestigious task of commanding the first Apollo mission was given to Captain Walter M. Schirra, a veteran of America's Gemini and Mercury programs. Accompanying him were Command Module Pilot, Major Donn Eisele, and physicist/civilian, Walter Cunningham—both were taking their first ride into space. Schirra, Eisele, and Cunningham would be the first men to ride on a Saturn rocket and were then expected to fly the new spacecraft for the full length of a lunar mission. Every single onboard system would have to be tested and studied. Apollo 7 would be the longest first flight of any spacecraft or aircraft in the history of aviation. Incredibly, within nine months of this first manned Apollo mission, two Americans would fly the hardware to the Sea Of Tranquility. This book includes the Apollo 7 Press Kit, the Prelaunch Mission Operation Report, the Post-Launch Mission Operation Report, and the Crew Technical Debriefing.

Apollo 8—The NASA Mission Reports			
	Book w/CD-ROM	400.2-01	$16.95
Level: Grades 9–Adult/1999	Windows		

Comes with a bonus Windows CD-ROM featuring the 22-minute NASA movie "Go For TLI". On December 21, 1968, the National Aeronautics and Space Administration sent three men to orbit the Moon. Commander Frank Borman, Command Module Pilot James Lovell, and Lunar Module Pilot William Anders were to be the first humans to enter deep space. It was the boldest step yet taken in the quest to fulfill President John Kennedy's goal of landing a man on the Moon by the end of the decade. To accomplish this task, the world's biggest and most complex rocket was built by a syndicate of America's leading aerospace manufacturers. Capable of taking over 100,000 pounds to the Moon, it was at that time the most complex machine ever devised by the hand of man. The Apollo-Saturn V was a goliath, and the flight of Apollo 8 proved it was an incredible vehicle. Apollo 8—The NASA Mission Reports finally puts in one place four of the most important documents from this triumphant odyssey—the Apollo 8 Press Kit, the Apollo 8 Premission Report and Objectives, the Apollo 8 Supplemental Technical Report, and the Apollo 8 Post-Flight Summary. These four documents show the staggering proportions of the undertaking required to send men into lunar orbit. It is a testament to the ingenuity of the American people and the bold courage of three men.

Apollo 9—The NASA Mission Reports			
	Book w/CD-ROM	400.2-02	$14.95
Level: Grades 9–Adult/1999	Windows		

Comes with a bonus Windows CD-ROM featuring the movie "Three to Make Ready". On March 3, 1969, Commander James McDivitt, Command Module Pilot David Scott, and Lunar Module Pilot Russell Schweickart would be the first people to fly in a true spacecraft. Although the insect-like Lunar Module had flown once before, this was to be the first manned test. This would also be the first time that all of the Apollo hardware would be flown together, and it would put one more piece in place toward the goal of reaching the Moon before the end of the decade. Fighting off preflight illnesses and a delayed launch, the crew flew a perfect 10-day mission. Apollo 9 also provided the world's first dramatic look at astronauts spacewalking around the Command, Service, and Lunar Module, and returned some of the most beautiful pictures ever taken of the LEM floating above the blue oceans of Planet Earth. Apollo 9 The NASA Mission Reports finally puts in one place four of the most important documents from this auspicious flight—the Apollo 9 Press Kit, the Apollo 9 Preflight Mission Operation Report, the Apollo 9 Post-Launch Mission Operation Report, and the Apollo 9 Mission Operation Report Supplement. These

four documents graphically illustrate the technology required to build a true space vehicle, a machine that can only perform its function in the harsh environment of space, and clearly illustrate the teamwork, dedication, and professionalism of the flight crew and NASA support team.

Apollo 10—The NASA Mission Reports

Book w/CD-ROM 400.2-04 $16.95

Level: Grades 9–Adult / 1999 Windows

On May 18, 1969, NASA launched the last in a series of daring test flights of the Apollo hardware. Apollo 10 would follow swiftly on the heels of the successful flight of Apollo 9. The goal was to send a second crew into deep space, but this time with the fully equipped hardware that would be required for a lunar landing. Veteran astronauts, Commander Tom Stafford and Lunar Module Pilot Gene Cernan, were to fly tantalizingly close to the barren lunar surface, a mere eight nautical miles, while Command Module Pilot John Young would be required to conduct the first rendezvous in lunar orbit to ensure the safe return of his crew mates. Apollo 10—The NASA Mission Reports finally puts in one place four of the most important documents from this auspicious flight—the Apollo 10 Press Kit, the Apollo 10 Prelaunch Mission Operation Report, the Apollo 10 Post-Launch Mission Operation Report, and the Apollo 10 Post-Launch Mission Operation Report Supplement. For the interest of collectors, students, and historians, Apollo 10—The NASA Mission Reports follows the final test flight of Apollo through a series of astonishing technological accomplishments, including the accurate measurement of distortions in the Moon's gravitational field, which would finally pave the way for man's first landing on another world.

Apollo 11—The NASA Mission Reports Vol. 1

Book w/CD-ROM 400.2-05 $16.95

Level: Grades 9–Adult / 1999 Windows

Comes with a bonus Windows CD-ROM. Since the first glimmerings of intellect on planet Earth, the Moon's quicksilver light has beckoned. In July of 1969 the people of the world were witness to an event which was the undisputed scientific accomplishment of the 20th century. When astronauts Neil Armstrong and Edwin (Buzz) Aldrin planted their footsteps in the barren dusty powder of the lunar surface they not only fulfilled President John Kennedy's bold challenge, but also mankind's ancient dream. An accomplishment without parallel, the flight of Apollo 11 stands alone as humanity's greatest feat of imagination made manifest. Everything about project Apollo was an exercise in superlatives. The Saturn V was the largest and most powerful machine ever made by man, wielding an unimaginable seven million pounds of thrust, while the Apollo spacecraft was able to travel a half a million miles and function with a precision to match the finest Swiss watch. Standing on the shoulders of generations, Armstrong, Aldrin, and Collins heralded the arrival of a new era, an era in which the horizon of mankind's dreams would be forever shifted. In Apollo 11—The NASA Mission Reports Volume 1, some of the rare official documentation of this historic voyage is collected and made commercially available for the first time. This finally puts in one place some of the most important documents from this final test flight—the Apollo 11 Press Kit, the Apollo 11 Preflight Mission Operation Report, the Apollo 11 Post-Flight Mission Operation Report, and the Apollo 11 Post-Flight Press Conference. Also included in this historic package is a CD-ROM which features almost 1,400 pictures taken during the flight, an hour of video, and three unique and exclusive high-resolution QuickTime panoramas of Tranquillity Base as never seen before. And as a special bonus, a foreword by Dr. Buzz Aldrin.

Apollo 11—The NASA Mission Reports Vol. 2

Book w/CD-ROM 400.2-06 $13.95

Level: Grades 9–Adult / 1999 Windows

Since the historic flight of Apollo 11, space historians and enthusiasts around the world have wondered what it was like to be aboard Eagle and Columbia. Apollo 11—The NASA Mission Reports Volume 2 features recently declassified reports which have finally been released to the public. After the initial flurry of press activity in 1969, the crew of Apollo 11 returned to their lives, and interviews became less and less frequent. Journalists the world over followed Armstrong, Aldrin, and Collins and tried to squeeze every last piece of information from them about their adventure, but, as is often the case, some stories had to be withheld. Now Apogee Books is proud to announce the first ever publication which will take you inside Apollo 11 as it journeyed to the Moon, as told by the men who made the trip. This is the real story, nothing held back, taken from transcripts on July

31, 1969. It is often technical and sometimes surprising and amusing—but it is always educational and inspiring. This is the story of three men who traveled into the unknown, relying on each other and the hard work of the people back on Earth. Three men who pushed the envelope to a new limit. Taken from the crew's own words, Apollo 11—The NASA Mission Reports Volume 2 will be informing people for generations. Also included in this historic package is a CD-ROM which features almost 2 1/2 hours of video of the complete unedited Moonwalk and a unique and exclusive high-resolution QuickTime panorama of Tranquillity Base as never seen before. And as a special bonus, an hour-long video interview with Dr. Buzz Aldrin.

Apollo 12—The NASA Mission Reports

Book w/CD-ROM 400.2-07 $16.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM featuring an exclusive 30th anniversary interview with Command Module Pilot Captain Richard "Dick" Gordon, the movie "Pinpoint For Science", the full EVA television record, the in-flight press conference, over 2,100 still photographs, and five QuickTime panoramas of the Ocean of Storms. When the crew of Apollo 11 returned to Earth in July 1969, they brought with them a wealth of new information about the Moon. Now astronauts Charles (Pete) Conrad, Alan Bean, and Richard Gordon would return to the Moon and build on that knowledge. The real test for the crew of Apollo 12 was not to see if they could get to the Moon, but to see if they could get to an exact place on the Moon. Their target was in an area known as the Ocean of Storms. On November 14, 1969, the crew of Apollo 12 blasted off to their place in history. Not only would Conrad and Bean become the third and fourth men to walk on the Moon, but they would land the Lunar Module Intrepid within 600 feet of their designated target. Waiting for them was the unmanned space probe Surveyor 3 which had soft-landed in April 1967. The flight of Apollo 12, which began almost catastrophically when the huge Saturn V was struck by lightning just moments after liftoff, went on to yield an enormous amount of valuable data collected during over 7 1/2 hours on the lunar surface. On their return home, the crew of Apollo 12 became the first humans to witness an eclipse of the Sun by the Earth. In Apollo 12—The NASA Mission Reports, some of the rare official documentation of the voyage of Apollo 12 is collected and made commercially available for the first time.

Apollo 13—Houston, We've Got a Problem

28 minutes/1970 **1/2" VHS** 007.3-04V $16.00

Level: Grades 7–Adult

Depicts the dramatic voyage of Apollo 13, in which the most serious accident ever to occur in space changed the mission from a routine lunar landing to a desperate fight for crew survival. The film ends with worldwide relief and joy when astronauts James Lovell, John Swigert, and Fred Haise splash down on target in the Pacific Ocean.

Apollo 14—The NASA Mission Reports

Book w/CD-ROM 400.2-14 $16.95

Level: Grades 9–Adult/2001 Windows

After the unfortunate accident which befell Apollo 13, the job of getting NASA back to the Moon fell on the shoulders of America's oldest astronaut, Alan B. Shepard. Shepard had been grounded since the flight of Freedom 7 in 1961 due to an inner ear disorder. After undergoing treatment, the "Icy Commander" was bumped to the top of the flight roster and appointed to command the flight of Apollo 14 to the Fra Mauro highlands of the Moon. Spending nearly 10 hours on the Moon in February 1971, Shepard and Lunar Module pilot Edgar Mitchell conducted a wide range of scientific experiments including Shepard's unplanned test of a golf ball in lunar gravity. Once more the world sat and watched in awe as the United States successfully put two more men on the Moon's surface while Stuart Roosa orbited above in the Command Module Kitty Hawk. Shepard and Mitchell hiked almost to the top of a 400-foot crater before running out of time and returning to the Lunar Module Antares. Apollo 14 returned to the Earth with a treasure trove of lunar data and over 100 pounds of Moon rocks. In Apollo 14—The NASA Mission Reports, some of the rare official documentation of the voyage of Apollo 14 is collected and made commercially available for the first time.

Apollo Moon Landing: Out of This World

72 minutes/2001 **DVD** 007.3-05D $21.00

Level: Grades 4–12

From President Kennedy's challenge to Neil Armstrong's first step on the Moon, from the near disaster of Apollo 13 to the Lunar Rover missions, this historically accurate video tells of the story of mankind's greatest adventure. Witness inspiring liftoffs, the Earth from space, and dramatic moments as the Apollo astronauts explore the alien landscape of another world. Featuring superb picture and sound quality that only DVD can offer, this exclusive production is the ultimate Apollo adventure. It was painstakingly assembled from hundreds of hours of footage taken by the astronauts and live television pictures beamed from the surface of the Moon. Copyrighted by Finley-Holiday Films/Steve Skootsky.

System Requirements: DVD-video player or DVD-ROM system with Windows '95/'98 or later, Macintosh System 7.5, OS 8/9 or later.

Flight of Apollo 11 (The Eagle Has Landed), The
30 minutes/1969 **1/2" VHS** 099.01-10V $16.00
Level: Grades 7–12

Presents the story of the first Moon landing in July 1969. Depicts the principal events of the mission, from the launching through the postrecovery activities of astronauts Armstrong, Aldrin, and Collins. Through television, motion pictures, and still photography, the program provides an "eyewitness" perspective of the Apollo 11 mission.

Moonwalk Series
Purchase our 4-part series condensed onto 1 videotape
2 hours/1970 **1/2" VHS** 099.06 V $32.00

Moonwalk Individual Program Descriptions

Program 1: The Day Before
Highlights the mood of the people during the long-awaited Apollo 11 mission. This unprecedented journey captured the heart of all the world.

Program 2: Adapting to a Space Environment
Examines the testing procedures Apollo operators used to simulate the space environment. Also details the functions of the different stages of the Moon rocket.

Program 3: One Small Step
Focuses on Neil Armstrong's historical first step on the Moon's surface.

Program 4: The Moon on Earth
Examines the research conducted on Moon rocks returned by the Apollo 11 mission. The studies revealed many aspects of the Moon's characteristics.

On the Shoulders of Giants
28 minutes/1973 **1/2" VHS** 007.3-03V $16.00
Level: Grades 7–Adult

Tells the story of Apollo 17, the final mission to the Moon. Includes an abundance of excellent footage of astronauts Cernan and Schmitt using the lunar rover, collecting more than 250 pounds of lunar rocks, and setting up experiments on the lunar surface.

Time of Apollo, The
28 minutes/1975 **1/2" VHS** 007.3-02V $16.00
Level: Grades 4–Adult

Offers a tribute to the historical accomplishments of the Apollo missions. As President Kennedy stated in 1961, "This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth."

	Format	Item No.	Price
America in Space: The First 40 Years			
60 minutes/1996	**1/2" VHS**	007.0-04V	$19.95
60 minutes/1999	**DVD**	007.0-04D	$19.95

From the original Mercury flights to the International Space Station and Mars, presents the complete saga of America's first 40 years in space. Copyrighted by Finley-Holiday Films/Steve Skootsky. Public performance rights for schools and libraries. All other rights reserved.

Gemini 6—The NASA Mission Reports

	Book w/CD-ROM	400.2-08	$16.95
Level: Grades 9–Adult/1999	Windows		

Includes a Windows CD-ROM featuring over 50 minutes of 16mm film footage of Gemini 6; over 180 still pictures from Gemini 6; two movies about the Gemini program; nearly one hour of MPEG video; and an exclusive interview with Gemini 6 Commander Wally Schirra. Lost in the glare of Apollo's success, the Gemini program is often forgotten. Without the 10 successful manned Gemini missions, NASA could not have accomplished Kennedy's seemingly impossible goal of landing a man on the Moon in the 1960s. Gemini 6 was the fifth manned flight of America's two-manned spacecraft. Aboard were Commander Wally Schirra and rookie pilot Tom Stafford. Their original mission flight plan was to attempt the first ever docking and rendezvous in space, an essential step if the pilots flying Apollo would ever be able to meet up in orbit around the Moon. The Soviet Union had claimed the first space rendezvous, but many felt that unless the pilot was in control and able to maneuver around the accompanying vehicle it could not truly be called a rendezvous. On October 25, 1965, the target vehicle, known as Atlas/Agena, failed to make orbit, and so the crew of Gemini 6 were suddenly presented with a totally revised and audacious flight plan. The long-duration Gemini 7 mission was already scheduled for launch, and so the crew of Gemini 6 were told that NASA would attempt a double-manned mission and rendezvous. This was undoubtedly a risky proposition which would stretch the NASA infrastructure to its limits. On December 15, 1965, ace pilot Schirra and rendezvous maestro Stafford closed to within a meter of Gemini 7, and America was one step closer to the Moon.

History of Space Travel Series

Purchase our 14-part series condensed onto 4 videotapes			
7 hours with printed lesson guide	**1/2" VHS**	099.01 V	$60.00

History of Space Travel Individual Program Descriptions

Program 1: Space Shuttle: Overview/1980
Reports on the preparations for an early 1981 Space Shuttle launch. The program covers the mission, the flight crew training, rocket engine tests, problems involving the thermal protection system tiles, and efforts of the NASA industry team during the final launch stages.

Program 2: Before Saturn and America in Space/1980
"Before Saturn" provides a retrospective look at the development of rockets from the early Chinese efforts through the development of the Saturn I booster. "America in Space" recounts the achievements in unmanned and manned space projects during the first five years of NASA's existence.

Program 3: Astronauts . . . U.S. Project Mercury/1960
Reports on the original Mercury astronauts, explaining their selection, testing, and training for America's first manned space program.

Program 4: Freedom 7/1961
Documents the first American manned space mission. Covers the training, preparation, launching, and recovery of astronaut Alan B. Shepard, Jr., for the first Project Mercury suborbital flight.

Program 5: Friendship 7, Part I/1962
Illustrates in detail the first American orbital space flight by astronaut John H. Glenn in 1962. The program also provides background on Project Mercury and the tracking network planned for the one-person Mercury missions.

Program 6: Friendship 7, Part II/1980
Continues the historical documentary illustrating the first American orbital space flight by astronaut John H. Glenn in 1962 and provides background on Project Mercury and the tracking network planned for the Mercury missions.

Program 7: Your Share in Space/1980
Relates space science discoveries and their application in the daily lives of citizens. Describes booster evolution, payload development, instrumentation systems, TIROS, solar cells, data processing machines, Project Mercury, tracking and communication, X-15, Ranger, Surveyor, and Apollo. Industry participation in space research and development is also depicted.

Program 8: Legacy of Gemini/1967
Illustrates, in the perspective of a single composite mission, the major accomplishments of the Gemini two-person space flights and the significance of these flights to the Apollo program. The film includes outstanding photography of the Earth and humans in space.

Program 9: Debriefing—Apollo 8/1969
Tells the story of humankind's first orbit around the Moon, with commentary on the significance of the Apollo 8 flight by several prominent Americans. The program features photography of the lunar surface, the Earth as seen from the Moon, and the onboard activities of astronauts Borman, Lovell, and Anders.

Program 10: The Flight of Apollo 11 (The Eagle Has Landed)/1969
Tells the story of our first lunar landing in July 1969. Depicts the principal events of the mission, from launch through the postrecovery activities of astronauts Armstrong, Aldrin, and Collins. Through television, motion pictures, and still photography, the film provides an "eyewitness" perspective of the Apollo 11 mission.

Program 11: Apollo 16, Nothing So Hidden/1972
Provides a visual documentary account of the Apollo 16 lunar landing mission and exploration in the highland region of the Moon, near the crater Descartes. Through the use of cinema verite' techniques, the real-time anxieties and lighter moments of the support teams in Mission Control and the Science Support Room were captured. The film includes some of the most spectacular lunar photography of any Apollo mission.

Program 12: Four Rooms Earthview/1975
Tells the story of the 3 Skylab missions, the 9 astronauts, and their 171 days in the manned laboratory. Skylab was the first U.S.-manned space station. Criss-crossing 70 percent of Earth's land area, Skylab sensors gathered information about many features of the planet.

Program 13: The Mission of Apollo/Soyuz/1975
Stresses the spirit of cooperation and friendship, which helped make the Apollo-Soyuz mission a success. The mission was a precedent-setting event in the sphere of international manned space flight. The program generally follows the mission timeline, with appropriate flashbacks to detail the periods of development and training. The program concludes with a projection on the future of international cooperation in space, featuring the Space Shuttle and the European development called Spacelab.

Program 14: Teacher Silent Video Lesson Guide/1980
Consists of questions, definitions, and student activities that teachers can use to plan lessons around the "History of Space Travel" series.

	Format	Item No.	Price
History of Space Flight 58 minutes/1992 Level: Grades 9–Adult	**1/2" VHS**	007.0-03V	$19.95

Uses a combination of rare paintings, historical footage, and the latest computer animation to trace the development of space flight. Shows how the vision and insight of rocket pioneer Wernher von Braun laid out the first serious blueprint for space, which led to the reality of manned space flight and provided much of the impetus for today's space programs. Hosted by astronaut Alan Shepard. Copyrighted by Finley-Holiday Films.

Human Space Flight: A History 78 slides with audio cassette Level: Grades 7–Adult	**SLIDE**	100.0-05	$21.00

Chronicles human space flight with emphasis on the lunar missions.

Human Space Flight: Living in Space 37 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-03	$11.00

Explain how astronauts live and work in the Space Shuttle environment.

Manned Space Flights 20 slides with descriptions	**SLIDE**	100.0-63	$8.00

Represent the era of the Mercury, Gemini, Apollo, and Skylab missions, 1961 through the mid-1970s. Produced by Finley-Holiday Film Corporation.

Mercury/Gemini/Apollo Overview 13 minutes/1987 Level: Grades 7–Adult	**1/2" VHS**	007.0-02V	$15.00

Provides a concise summary of the Mercury, Gemini, and Apollo missions, including mission-by-mission accomplishments and historic footage of launches, onorbit activities, and splashdowns.

NASA . . . The 25th Year 50 minutes/1983 Level: Grades 9–Adult	**1/2" VHS**	007.0-01V	$21.00

Chronicles, from Explorer I to the Space Shuttle, the numerous challenges and accomplishments that have marked a quarter century of air and space exploration.

NASA "Why?" Files Video Series/2000–2001 **Program 4: The Case of the Challenging Flight** 30 minutes/2001 Level: Grades 3–5	**1/2" VHS** CLOSED CAPTIONED	099.32-04V	$16.00

In this program, students are invited to actively join the tree house detectives as they investigate the "Case of the Challenging Flight", and students from a rival school challenge them to compete in a flight contest. The tree house detectives accept their rival's challenge to compete in the "design it, build it, and fly it" competition. Using scientific inquiry, our detectives design and build an airplane by using common household materials, and they learn about the four basic components of flight: lift, thrust, drag, and gravity. While building their airplane, the tree house detectives use what they've learned to design and build an "egg-stra-ordinary" flying machine. Broadcast: March 1, 2001.

	Format	Item No.	Price
Astronauts . . . U.S. Project Mercury 28 minutes/1960 Level: Grades 7–12	**1/2" VHS**	007.1-01V	$16.00

Presents the story of the seven original U.S. astronauts. Explains their selection, testing, and training for America's first manned space program.

Friendship 7—The NASA Mission Reports			
	Book w/CD-ROM	400.2-03	$14.95
Level: Grades 9–Adult/1999	Windows		

Comes with a bonus Windows CD-ROM featuring a 57-minute NASA movie. On February 20, 1962, after weeks of delays, the fledgling National Aeronautics and Space Administration sent a man into orbit around the Earth. From that day to the present, the name of John Glenn became synonymous with the hazardous new occupation of an astronaut. The likeable Ohio family man, with his cool determination, professional nature, and calm resolve, would define a standard by which all of his successors would be measured. Friendship 7—The NASA Mission Reports takes a look at the first flight of John Glenn through the eyes of the people who made his trip possible. It also includes Glenn's own firsthand recollections of his journey as he reported them on his return. In the days before press kits, NASA issued news releases to the media. Reproduced here in its entirety is the rare official news release for January 21, 1962. Also included is a transcript of the entire ground-to-spacecraft communications, as well as dozens of diagrams and photographs of the Mercury-Atlas space vehicle. This material is taken directly from the NASA archives. It gives an unprecedented insight into the man, the team that supported him, and the true nature of what it meant to have the "Right Stuff".

	Format	Item No.	Price

Ascent and Entry Edit for Space Shuttle Mission STS-65
93 minutes of raw footage/1994 — **1/2" VHS** — 007.6-29V — $16.00

An astronaut's eye view of what happens inside the flight deck during launch and landing at the Kennedy Space Center. This footage was taken onboard Space Shuttle mission STS-65, the mission that launched the International Microgravity Laboratory in 1994. This raw footage could be useful for classroom launch simulations.

PLEASE NOTE: This videotape includes raw footage and is not a program. There are long gaps where there is no sound and other areas with sound and no picture.

Best of the Space Shuttle/1977–1984
40 slides with audio cassette — **SLIDE** — 100.0-20 — $11.50
Level: Grades 4–12

Examines Space Shuttle highlights from the first dramatic flights to the ongoing array of spectacular spacewalks and experiments. Produced by Finley-Holiday Films Corporation.

Dream Is Alive, The
37 minutes/1985 — **1/2" VHS** — 007.6-22V — $14.95
Level: Grades 4–Adult — **DVD** — 007.6-22D — $20.00

Narrated by Walter Cronkite, gives you a window seat on the Shuttle. The viewer can share the astronauts' experiences of working, eating, and sleeping in zero gravity, and can look back at our magnificent Earth and witness an exciting satellite repair. Copyrighted by the Smithsonian Institution/Lockheed Corporation.

Liftoff to Learning: Go for EVA
14 minutes/1991 — **1/2" VHS** — 007.6-26V — $15.00
Level: Grades K–8

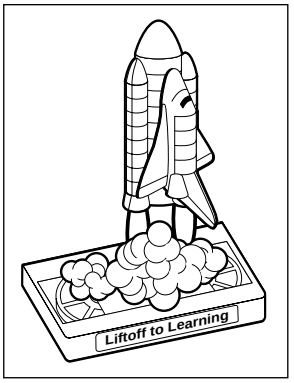
Presents astronauts aboard *Atlantis* mission STS-37 discussing the reasons for wearing spacesuits during spacewalking missions, how spacesuits work, and what kinds of jobs astronauts perform while spacewalking. Actual footage of spacewalks—also known as extravehicular activities (EVAs)—illustrates how spacesuits allow astronauts to operate scientific apparatus, assemble equipment and structures, pilot the Manned Maneuvering Unit, take pictures, and service satellites and space hardware.

Liftoff to Learning: Newton in Space
13 minutes/1992 — **1/2" VHS** — 007.6-27V — $15.00
Level: Grades 5–8

Shows astronauts on orbit during mission STS-39 demonstrating the importance of Newton's laws of motion to space flight. The program explains the difference between weight and mass, the basic principles of balanced and unbalanced forces, action and opposite reactions, and how the three laws of motion affect the way a rocket operates. Using the microgravity environment of Earth's orbit, Space Shuttle astronauts conduct simple force-and-motion demonstrations in ways not possible on Earth.

Liftoff to Learning Series
Purchase our 16-part series condensed onto 3 videotapes
5 hours with printed lesson guide — **1/2" VHS** — 099.95 V — $48.00
CLOSED CAPTIONED

Shows that every liftoff of the Space Shuttle is the beginning of a voyage of exploration and discovery. The experiences of Shuttle astronauts capture the imagination of students of all ages. Students study science, mathematics, and technology with crewmembers aboard Space Shuttle flights. Space becomes the departure point for learning, integrating many other subject areas, bringing them to life. Recognizing the potential of the Space Shuttle experience in the classroom, NASA's Education Division and the Johnson Space Center's Flight Crew Operations Directorate have joined forces to create a dynamic videotape series to sup-



port teachers in the classroom. The series captures the excitement of spaceflight and explains, in basic and practical terms, the scientific, mathematical, and technological concepts that make spaceflight possible. These learning tools also provide concrete examples of the global perspective spaceflight offers and the new frontiers of research and exploration spaceflight has created. Taking advantage of state-of-the-art video production facilities and computer animation capabilities of NASA's Johnson Space Center, these programs combine the stunning visual images of spaceflight with clear and entertaining graphics. They may be purchased as a complete set or individually throughout the catalog. For descriptions, check the alphabetical index for their individual title under Liftoff to Learning.

Individual Program Titles:

Program 1: Space Basics
Program 2: Go for EVA
Program 3: Newton in Space
Program 4: All Systems Go
Program 5: The Atmosphere Below
Program 6: Voyage of Endeavour—Then and Now
Program 7: Toys in Space II
Program 8: Living in Space
Program 9: From Undersea to Outer Space
Program 10: Tethered Satellite: A Videotape for Physics and Physical Science
  Part I: Tethered Satellite: Forces and Motion
  Part II: Electrical Circuits in Space: The Electrodynamics of the Tethered Satellite
Program 11: Assignment Spacelab
Program 12: Microgravity
Program 13: Geography From Space
Program 14: Mathematics of Space—Rendezvous
Program 15: Let's Talk Robotics
Program 16: Plants in Space

Liftoff to Learning: Space Basics
21 minutes/1991 **1/2" VHS** 007.6-25V $16.00
Level: Grades 5–8

Shows astronauts aboard Shuttle mission STS-41 using computer graphics and visual demonstration to answer four basic questions about spaceflight: How do spacecraft travel into space? How do spacecraft remain in orbit? Why do astronauts float in space? How do spacecraft return to Earth? Viewers learn how English scientist Isaac Newton formulated the basic science behind Earth's orbit more than 300 years ago.

Mission STS-26: The Crew Report
18 minutes/1988 **1/2" VHS** 007.6-13V $15.00
Level: Grades 5–Adult

Provides an overview of the September 29, 1988, mission of Discovery, the first Space Shuttle mission after the *Challenger* accident. Narrated by mission astronauts, this program highlights the deployment of a communications satellite and the science experiments performed onboard. It contains beautiful views of the Earth and an amusing look at Shuttle life set to popular music.

NASA CONNECT Video Series/2000–2001
Program 1: Measurement, Ratios, and Graphing: 3, 2, 1 Crash!
30 minutes/2000 **1/2" VHS** 099.22-01V $10.00
Level: Grades 5–8 CLOSED CAPTIONED

The first of five programs in the 2000–2001 NASA CONNECT series. Produced by the NASA Langley Research Center's Office of Education. In this program of NASA CONNECT, students will learn the history of the National Aeronautics and Space Administration (NASA) and discover how NASA Langley Research Center improves aircraft performance and safety by conducting extreme tests such as crashing planes, skidding tires, and blasting water. Students will observe NASA engineers using measurement, ratios, and graphing to make predictions and draw conclusions during their extreme tests. Students will learn how NASA researchers (1) measure and collect data, (2) develop ratios and graphs to analyze their data, (3) compare their results, and (4) predict possible solutions for their real-world problems.

Propulsion: Space Shuttle
48 slides with audio cassette — **SLIDE** — 100.0-08 — $13.50
Level: Grades 4–12

Highlights the NASA Space Transportation System, its functions, and possible uses for the future.

Return to Space
15 minutes/1988 — **1/2" VHS** — 007.6-17V — $15.00
Level: Grades 7–Adult

Tells the story of how STS-26 returned America to space after the *Challenger* disaster. The program details the improvements made to the Space Shuttle and summarizes some of the major accomplishments of past Shuttle flights.

Shuttle: A Remarkable Flying Machine
30 minutes/1981 — **1/2" VHS** — 007.6-10V — $16.00
Level: Grades 4–Adult

Features the first historic flight of the Space Shuttle *Columbia*. Highlights include the liftoff on April 12, 1981, the onboard activities of Young and Crippen, and a spectacular landing on Rogers Dry Lake bed in California.

Space Shuttle Demonstration
15 minutes/1983 — **1/2" VHS** — 007.6-12V — $15.00
CLOSED CAPTIONED — *(Signed for the Hearing Impaired)*

Prepared by the Kennedy Space Center, explains the Space Shuttle to hearing-impaired adults.

Space Shuttle Flights: 100 Stock Photos
CD-ROM — 400.0-84 — $15.00
Mac/Windows 3.1/Windows '95

Offers a collection of digital color photos selected from thousands of NASA images covering Shuttle missions from the first flight in 1981 to the second Hubble Space Telescope Servicing Mission in 1997. Includes photos of the Space Shuttle, astronauts in space, satellite launches, Earth from the Shuttle, and more. Compiled by Finley-Holiday Film Corporation. No copyright asserted for the images on this disc.

Space Shuttle STS 1-5—The NASA Mission Reports
Book w/CD-ROM — 400.2-15 — $21.95
Level: Grades 9–Adult/2001 — Windows

The Space Shuttle is one of the great triumphs of modern technology. Capable of carrying 65,000 lbs. of cargo, weighing in at 90 tons, and measuring 122 feet long, Rockwell's Orbiter stands alone as the world's only aircraft capable of flying into space and returning at speeds exceeding 18,000 miles per hour. On April 12, 1981, two astronauts climbed aboard the fully fueled and integrated Space Transportation System.

Twenty years before on the same day, a Russian missile had propelled 10,395 lbs. into space using 1.1 million pounds of thrust. Gagarin flew 25,000 miles in 108 minutes. On this day, 180,000 pounds would ride atop 7.7 million pounds of thrust. However, this crew would be landing on a runway after traveling over a million miles in a little over 54 hours. This book covers the Space Shuttle through the test flight stage and on to its first operational flight. With comprising rare NASA documents never before released to the public, the reader is taken inside this remarkable machine in the words of some of the men who flew it.

Space Shuttle Story, The
60 minutes/1996 **1/2" VHS** 007.6-28V $25.00

Contains the ultimate collection of Space Shuttle adventures compiled from more than 40 missions spanning 8 years. Recovering from the *Challenger* accident, Shuttle astronauts launch missions to Venus and Jupiter, repair the Hubble Space Telescope, probe planet Earth, expand the frontiers of space, and visit the Russian space station Mir. Included are numerous clips from astronauts' "home movies," complete with crewmember comments, retrieved from NASA's archives and rarely seen by the public. Copyrighted by Finley-Holiday Films/Steve Skootsky. Public performance rights for school and libraries. All other rights reserved.

We Deliver: Summary of Shuttle Flights 5, 6, 7, and 8
30 minutes/1983 **1/2" VHS** 007.6-11V $16.00
Level: Grades 4–Adult

Covers the first four operational missions of the Space Transportation System: STS flights 5, 6, 7, and 8. It stresses the operational common denominator of these missions—satellite deployment—and includes significant secondary achievements, such as the first female astronaut, the first African American astronaut, the first night launch and landing, and some of the more important onboard experiments.

	Format	Item No.	Price
Animal Physiology in Space: Frog Embryology Experiment 11 minutes/1994 Level: Grades 9–12	**1/2" VHS**	003.1-01V	$15.00

Provides an overview of the frog embryology experiment that flew on the STS-47 Spacelab-J mission.

BioBLAST
Level: Grades 9–12/1999 **CD-ROM**

BioBLAST (Better Learning through Adventure, Simulation, and Telecommunications) is a multimedia curriculum supplement for high school biology classes. Based on NASA's Advanced Life Support research, the program offers students hands-on laboratory investigations, computer simulations, and Internet-based telecommunication resources to study the interdependent components of a bioregenerative life-support system (BLiSS) for a futuristic, Moon-based research outpost. Student tasks are presented as part of an adventure mission at a virtual lunar research station. The mission culminates with students testing their own BliSS designs using simulation software developed at NASA's Classroom of the Future. Components of the curriculum package include two CD-ROMs, a teacher guide, introductory videotape, Web site, and list serve.

SYSTEM REQUIREMENTS: Macintosh/Power PC, 640 x 480 monitor, 256 colors, 4X CD-ROM, 16 MB memory, 24 MB recommended, 17 MB free hard disk space, Internet Explorer or Netscape Navigator, version 3.0 or later, QuickTime 7.1.2 or later. Windows 486 or Pentium, VGA 640 x 480 monitor, 256 colors, 4X CD-ROM, 16 MB memory, 24 MB recommended, 8 MB free hard disk space, Internet Explorer or Netscape Navigator, version 3.0 or later, Windows '95 or later, QuickTime 2.1.2.59 or later, sound card and speakers.

BioBLAST Includes: 1 BioBLAST CD, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	Single User	Windows	400.1-26W	$60.00
BioBLAST Includes: 1 BioBLAST CD, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	Single User	Macintosh	400.1-26M	$60.00
BioBLAST Includes: 5 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	5-Pack	Windows	400.1-27W	$249.00
BioBLAST Includes: 5 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	5-Pack	Macintosh	400.1-27M	$249.00
BioBLAST Includes: 10 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	10-Pack	Windows	400.1-28W	$449.00
BioBLAST Includes: 10 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD	10-Pack	Macintosh	400.1-28M	$449.00

	Format	Item No.	Price

BioBLAST
10 minutes/1999 — **1/2" VHS** — 003.1-11V — $5.00
Level: Grades 9–12
APPLICATION: Life Science

A 10-minute introduction to the BioBLAST CD and related activities. The CD-ROM is available individually in a 5-pack set or a 10-pack set.

Biology and Space Exploration Six-Part Video Series, The
Purchase our 6-part series condensed onto 1 videotape
2 hours — **1/2" VHS** — 099.98 V — $32.00
Level: Undergraduate and Graduate Students

Highlights selected aspects of life sciences and contains space flight footage, graphics, charts, pictures, and interviews to make the materials interesting and intelligible to viewers. This video series is part of a joint effort of NASA Ames Research Center scientists to increase public awareness and understanding of life sciences in space. Includes the following programs:

Program 1: The Origin and Early Evolution of Life
Program 2: SETI: The Search for Extraterrestrial Intelligence
Program 3: The Cardiovascular System in Space
Program 4: The Musculoskeletal System in Space
Program 5: Group Interactions and Crew Performance
Program 6: Life Support Systems in Space

Cardiovascular System in Space, The
18 minutes/1994 — **1/2" VHS** — 003.1-06V — $16.00
Level: Undergraduate and Graduate Students

Provides a detailed account of the effects of gravity on the human circulatory system. Discusses how the loss of gravity-induced blood pressure gradients leads to medical problems associated with headward edema, reduced blood volume, and postflight orthostatic intolerance.

Group Interactions and Crew Performance
23 minutes/1996 — **1/2" VHS** — 003.1-08V — $16.00
Level: Undergraduate and Graduate Students

Elaborates on group cohesion, open communication, and overall well-being among crewmembers. Furthermore, shows how Earth analogs can be used as models to study the psychological effects of long-term confinement.

Life Support Systems in Space
12 minutes/1995 — **1/2" VHS** — 003.1-09V — $15.00

Outlines the potential hazards faced by astronauts on space missions and describes the equipment required for survival in environments hostile to life.

Liftoff to Learning: Assignment Spacelab
17 minutes/1995 — **1/2" VHS** — 003.1-03V — $15.00
Level: Grades 5–8 — CLOSED CAPTIONED

Shows how the unique microgravity environment of Earth orbit is used for scientific experiments and how the rules of scientific experimentation and safety that apply to research on Earth also apply to astronauts in space. Onorbit scenes were taken during the STS-58 mission of *Columbia*.

	Format	Item No.	Price

Liftoff to Learning: From Undersea to Outer Space
15 minutes/1994 — **1/2" VHS** — 003.1-02V — $15.00
Level: Grades 5–9 — CLOSED CAPTIONED

Tells the story of a life sciences experiment conducted on the first Spacelab Life Sciences mission flown on the Space Shuttle. More than 2,000 jellyfish were sent in space to learn about how living things adapt to the microgravity environment of Earth orbit. Scientists examined how microgravity affects the development of young jellyfish, especially their gravity receptors. The gravity receptors of jellyfish serve a purpose similar to the inner ear of human beings for balance and orientation.

Liftoff to Learning: Plants in Space
13 minutes/1999 — **1/2" VHS** — 003.1-10V — $15.00
Level: Grades 5–12 — CLOSED CAPTIONED
APPLICATION: Life Science

Students at an elementary school participate in an experiment on plant growth with Space Shuttle astronauts. Identical seed growth pouches are planted with corn and soybean seeds. Some of the seeds are germinated on Earth and others on the Space Shuttle in Earth orbit. Rather than drawing conclusions on the effects of microgravity on plant growth, viewers are invited to participate in the experiment by growing seeds on Earth as control experiments. A video resource guide, which provides data on the experimental plants grown in space, is provided. This data can be compared with the data collected on the control plants.

Liftoff to Learning: Voyage of *Endeavour*—Then and Now
20 minutes/1992 — **1/2" VHS** — 008.0-08V — $16.00
Level: Grades 5–12 — CLOSED CAPTIONED

Captures the excitement of the maiden flight of NASA's Space Shuttle *Endeavour* and contrasts it with its namesake, the 17th century research sailing vessel commanded by James Cook. Students will experience *Endeavour*'s historic rescue of the stranded INTELSAT VI satellite and the first three-person extravehicular activity. Cook's voyage provides an apt parallel: charting unexplored land and waters in the South Pacific, New Zealand, and Australia, and using scientists and artists to collect data on plants, wildlife, and native peoples. Orbital scenes were taken during the STS-49 mission in May 1992.

Microgravity Science
24 slides with descriptions — **SLIDE** — 100.0-45 — $8.50
Level: Grades 9–12

Examines many of the microgravity experiments conducted on recent Shuttle missions and the potential benefits this research will have for humankind.

Musculoskeletal System in Space, The
21 minutes/1995 — **1/2" VHS** — 003.1-07V — $16.00
Level: Undergraduate and Graduate Students

Discusses changes that occur in our musculoskeletal system in the absence of weight-bearing, as well as the countermeasures that can be developed to reduce muscle atrophy, bone loss, and back pain in space.

NASA Biology: On Earth and in Space
Purchase our 14-part series condensed onto 4 videotapes
7 hours/1987 **1/2" VHS** 099.07 V $60.00

NASA Biology Individual Program Descriptions

Program 1: Life in Space
Highlights with Frederick Durant III, former director of aeronautics, National Air and Space Museum, the history of space flight.

Program 2: Gravity and Life
Presents Dr. Richard Keefe, professor of anatomy, Case Western Reserve University, explaining the role of gravity in the development of life.

Program 3: Making Medicine in Space
Explains how medicine can be made economically in space, with Dr. Charles Walker, shuttle payload specialist, McDonnell Douglas Corporation.

Program 4: Earth's Air
Presents Joel Levine, Langley Research Center, who describes the composition of the Earth's atmosphere and its changes over geologic time using video imagery.

Program 5: Earth's Future Climate
Presents Dr. James Kasting, Ames Research Center, who discusses Earth's carbon dioxide cycle and its relation to the "greenhouse effect."

Program 6: Origins of Life on Earth
Presents Dr. Antonio Lascano, the University of Mexico, who describes possible origins of life on Earth. PLEASE NOTE: The quality of this master is below normal. For research or history use only.

Program 7: Exobiology
Discusses problems human beings may face during long space flights, with Dr. Donald DeVincenzi, Chief of Biological Research, NASA Headquarters.

Program 8: The Human Machine in Space
Presents Dr. James Logan, Chief of the Medical Operations Branch, Johnson Space Center, who discusses how human organisms function during space travel.

Program 9: The Viking Expeditions
Describes unmanned missions to Mars and searches for life, with Dr. Gerald Soffen, Goddard Space Flight Center.

Program 10: The Mars Panel Discussion, Part I
Presents Dr. Carl Sagan moderating a discussion by five space research scientists on future exploration of Mars.

Program 11: The Mars Panel Discussion, Part II
Presents Dr. Carl Sagan moderating a discussion by five space research scientists on future exploration of Mars.

Program 12: In Search of Extraterrestrial Intelligence (Dr. Seeger's View)
Describes NASA's program for listening to radio signals from space in search of extraterrestrial intelligence, with Dr. Charles L. Seeger, professor of physics and astronomy, San Francisco State University.

Program 13: Planning for the Future
Presents Jesco Von Putkamer, NASA Headquarters, who discusses the humanistic and intellectual benefits of space exploration. Focuses on NASA's plans for a permanent, manned space station.

Program 14: Space Policy

Presents Dr. John Logsdon, director of graduate programs in science, technology, and public policy at George Washington University, discussing space policy and its importance.

NASA "Why?" Files Video Series/2000–2001
Program 1: The Case of the Unknown Stink
30 minutes/2000 **1/2" VHS** 099.32-01V $16.00
Level: Grades 3–5 CLOSED CAPTIONED

In this program, students are invited to join the tree house detectives as they investigate "The Case of the Unknown Stink". The tree house detectives accept the challenge of trying to find the source of an unpleasant odor that is invading surrounding neighborhoods. To determine the source of the stink, our detectives learn about the sense of smell—what it is, how humans and animals smell, and how wind speed and direction influence the movement of odor. They also learn how NASA's Atmospheric Science research can help solve the case. While investigating the case, the tree house detectives learn that the source of the "unknown stink" is right under their noses.

Origin and Early Evolution of Life, The
21 minutes/1995 **1/2" VHS** 003.1-04V $16.00
Level: Undergraduate and Graduate Students

Explores Earth's early stages of existence and the theories proposed to explain the evolution of life on Earth.

SETI: The Search for Extraterrestrial Intelligence
21 minutes/1996 **1/2" VHS** 003.1-05V $16.00
Level: Undergraduate and Graduate Students

Examines how present-day technology is used to seek evidence of intelligent life elsewhere in the universe.

	Format	Item No.	Price
Astrosmiles			
24 minutes/1986	**1/2" VHS**	006.3-05V	$16.00
Level: Grades 7–Adult			

Contains footage from postflight press conferences of several missions showing life aboard the Shuttle, including daily living activities and scientific experiments. This video is educational and entertaining.

Eating and Sleeping in Space			
30 minutes/1985	(OPEN CAPTIONED) 1/2" VHS	006.3-03V	$16.00
Level: Grades 4–12	**1/2" VHS**	006.3-04V	$16.00

Presents Dr. Sally Ride discussing how astronauts eat and sleep aboard the Space Shuttle.

Launching the School Year with President Bush			
60 minutes/1991	**1/2" VHS**	006.3-10V	$21.00
Level: Grades 3–6			

Presents President George Bush and NASA Administrator Richard Truly teaching a unique math and science lesson aimed at elementary-level students. Third and fourth graders from Washington, DC, and La Porte, Texas, ask the President questions and learn about living and working in space. Participants include astronauts Charlie Bolden and Tammy Jernigan, and Spacemobile teacher Lisa McLeod. This program was broadcast live on September 17, 1991.

Liftoff to Learning: All Systems Go			
34 minutes/1992	**1/2" VHS**	006.3-11V	$16.00
Level: Grades 5–12	CLOSED CAPTIONED		

Presents the astronauts onorbit during the first Spacelab Life Sciences mission, discusses some of the physiological changes that occur in the human body while in a microgravity environment, and attempts to answer important questions on how the body readapts to Earth's environment. The videotape shows research conducted aboard the Space Shuttle on six systems that examine the heart, lungs, blood, muscles, cells, and the immune system, among others. This program is segmented, enabling teachers to extract topics that are most relevant to current classroom studies.

Liftoff to Learning: Living in Space			
10 minutes/1994	**1/2" VHS**	006.3-15V	$10.00
Level: Grades K–4	CLOSED CAPTIONED		

Demonstrates what it is like to live and work in space. Viewers are invited by the Space Shuttle crew to join the astronauts as they go through their daily routine living onboard the Space Shuttle. Students see the similarities and differences in eating, exercising, relaxing, maintaining personal hygiene, sleeping, and working in space versus on Earth. Orbital scenes were taken during the STS-56 mission.

Liftoff to Learning: Toys in Space II			
37 minutes/1993	**1/2" VHS**	006.3-14V	$16.00
Level: Grades K–12	CLOSED CAPTIONED		

Provides a hands-on way for students to investigate the principles of mathematics and science that make many common toys function. The Space Shuttle crew invites students to experiment with similar toys in their classroom and hypothesize how these same toys will operate in microgravity. Scenes of the STS-54 astronauts operating the toys in space serve as data for students to confirm or reject their hypotheses. Includes a comprehensive guide.

	Format	Item No.	Price
Mars, What Would You Wear? 3 minutes/1998 Level: Grades 3–12	**1/2" VHS**	006.3-18V	$10.00

A humorous three-minute presentation designed to get students thinking about "What would you wear for a trip to Mars?" The program is filmed aboard NASA's KC-135 aircraft during flights to simulate different degrees of weightlessness. Hosted by Johnson Space Center engineer Phil West. Includes the Suited for Spacewalking guide.

NASA Spacesuit, The 15 minutes/1990 Level: Grades 7–Adult	**1/2" VHS**	006.3-08V	$15.00

Examines the evolution and design of the NASA spacesuit from a 1930s' pressure suit used by aviator Wiley Post to the current extravehicular maneuvering unit used on the Space Shuttle.

Physics of Toys in Space 51 minutes/1993 Level: Grades K–12	**1/2" VHS**	006.3-12V	$21.00

Presents the astronauts onboard Space Shuttle mission STS-54 using the laws of physics to demonstrate how toys perform in microgravity. The astronauts answer questions from four elementary schools while performing experiments. The featured toys include: swimming fish, frog, and submarine; balloon helicopter; gyroscope and gravitron; friction-engine car and circular track; magnetic marbles; Rat Stuff, the flipping mouse; basketball and hoop; and paper boomerang. Includes a video resource guide.

Shuttle Life in the World of Weightlessness 29 minutes/1985 Level: Grades 4–12	**1/2" VHS**	006.3-02V	$16.00

Presents Dr. Sally Ride showing the problems and opportunities that orbiting the Earth aboard the Space Shuttle posed for daily living.

Suited for Space Videoconference 60 minutes/1991 Level: Grades 5–8	**1/2" VHS**	006.3-09V	$24.00

Shows an interactive Challenger Center videoconference on January 25, 1991. Features David Zahren, Challenger Center faculty member, demonstrating activities that illustrate the harshness of outer space. Astronaut Dr. Kathryn Sullivan explains the Shuttle spacesuit and extravehicular mobility unit. Students from around the United States call in to ask astronaut Colonel Frederick Gregory questions about living and working in space. Includes an activity book that contains directions for many of the activities demonstrated on the tape. Reproduced with permission from the Challenger Center. The tape and activity booklet may be reproduced for educational use only.

That NASA Show **Program 1: Tortillas in Space** **Program 2: Space Wear** 52 minutes/2001 Level: Grades 3–8	**1/2" VHS** CLOSED CAPTIONED	006.3-19V	$16.00

This video shows a light look into the serious subjects surrounding America's space program. If you want to know more about flying tortillas in space, designing space garments that are functional but also fashionable, and building a better burger, watch "That NASA Show." It's a TV show that fills in the spaces.

Program 1: Tortillas in Space (27 minutes)
Have you ever considered playing Frisbee with your food? Come aboard the Tortillas in Space episode of "That NASA Show" and see for yourself how the fine art of tortilla tossing in microgravity has been per-

fected. Your appetite will be stimulated, and you will learn that space food is more than the average tube of puree. Hosted by NASA Engineer Phil West, guests include space food scientist Vickie Kloeris, space farmer John Gruener, and astronaut Bill McArthur.

Program 2: Space Wear (24 minutes)
If you were suddenly called into service in space, what would you wear? Would you be able to go into your closet and pull out the "right stuff"? Do you know what it takes to design space clothes? Watch the Space Wear episode of "That NASA Show" and find out how fashion meets function in zero gravity. It's an out-of-this-world fashion show. Astronaut Jerry Ross and his daughter, space suit engineer Amy Ross, join host, NASA engineer Phil West, for this program. Both programs were taped in front of a live studio audience at Space Center Houston, in Houston, TX.

Toys in Space
17 minutes/1985 **1/2" VHS** 006.3-06V $15.00
Level: Grades 4–8

Shows elementary students hypothesizing about how selected toys will perform in the weightless conditions of space. Classroom discussion is followed by footage of astronauts demonstrating these toys during a 1985 Space Shuttle flight. Four toys are highlighted: top, ball and jacks, slinky, and yo-yo.

Toys in Space Activity Kit
10-piece set **KIT** 006.3-07P $30.00

Contains the 10 toys Shuttle astronauts carried with them on STS 51-D. Designed to be used with the "Toys in Space" videotape programs. Please refer to our Activity Kits/Space Memorabilia section for detailed ordering information.

Toys in Space: Mission 51-D Highlights
60 minutes/1985 **1/2" VHS** 006.3-07V $21.00
Level: Grades 4–Adult

Offers 10 mini-segments during which astronauts give detailed explanations of how toys operated in the microgravity environment of the Space Shuttle. Demonstrations are followed by excerpts from the STS 51-D postflight press conference.

Toys in Space II Activity Kit
7-piece set **KIT** 006.3-12P $25.00

Contains seven of the toys Shuttle astronauts carried with them on mission STS-54. Designed to be used with the physics of "Toys in Space" and "Toys In Space II" videotape programs. Contains the following toys: car and track, basketball with hoop, magnetic marbles, swimming toy, gravitron, flipping toy, and balloon helicopter. Please refer to our Activity Kits/Space Memorabilia section for detailed ordering information.

U.S. Microgravity Laboratory 2 Preflight Education Videotape
42 minutes/1995 **1/2" VHS** 006.3-16V $21.00
Level: Grades K–4

Contains the ground-based experiments done by the astronaut crew aboard mission STS-73. The program is designed to show teachers and students hands-on experiments that can help them learn about microgravity research. Includes the Microgravity Teacher's Guide with Activities for Physical Science booklet.

	Format	Item No.	Price
Go for Assembly: Building the International Space Station			
11 minutes/1997	**1/2" VHS**	006.4-07V	$10.00
Level: Grades 7–12			

Chronicles the logistics of building an orbiting laboratory in space. Contains interviews with many of the astronauts who will be assembling the International Space Station. Discusses new spacesuit and tool enhancements, the robotic arm and hand, neutral buoyancy training facilities at the Johnson Space Center, and the Crew Equipment Translation Assembly Cart, which will help astronauts slide along the truss structure during station assembly.

International Space Station: Some Assembly Required			
60 minutes/1999	**1/2" VHS**	006.4-20V	$16.00
Level: Grades 6–12			

Students get an inside look at what it takes to assemble the people, the parts, and the plans for the world's largest orbiting research facility, the International Space Station. Today, flight hardware is being manufactured in many countries around the globe, and the elements of ISS are beginning to be launched and assembled in space. In this program, space station experts show: astronaut training around the world; basics of living and working in space; a look inside the ISS modules and how they work; current research in microgravity; and the benefits for life on Earth. This program is a videotape of a live teleconference broadcast in February 1999.

International Space Station: The Vision and Mission			
8 minutes/2001	**1/2" VHS**	006.4-25V	$10.00
Level: Grades 5–Adult	CLOSED CAPTIONED		

Highlights a human outpost in space, an era of discovery and achievement that is unique, ambitious, and visionary. The International Space Station is dedicated to the peaceful pursuit of space exploration. Through hard work, cooperation, and perseverance, this dream has come true. Crews from around the world are working, building, learning, and paving the way to a brighter future, creating a station without borders. Soar with us into the future.

International Space Station Overview			
11 minutes/1997	**1/2" VHS**	006.4-06V	$10.00
Level: Grades 7–12			

Presents an overview of the International Space Station (ISS). Discusses how research conducted onboard the ISS will have many benefits for humankind. Outlines the roles cooperating nations will play in the construction and maintenance of the ISS. Also discusses station design and orbit.

International Space Station Teleconference: Countdown to Launch			
60 minutes/1998	**1/2" VHS**	006.4-08V	$16.00
Level: Grades 6–12			

Contains an edited version of a satellite teleconference originally broadcast on February 19, 1998. During this program, space station experts demonstrate and discuss spacesuit technology, underwater and virtual training, robotic tools that will be used in construction, how and why plants are grown in space, and current research in microgravity that may lead to new medical therapies on Earth. Includes a site coordinators' guide with supporting print materials and activities.

International Space Station Teleconference: Open for Business			
120 minutes/1998	**1/2" VHS**	006.4-09V	$16.00
Level: Research Specialists			

Contains an edited version of a satellite teleconference originally broadcast on February 26, 1998. This pro-

gram is intended for professionals interested in space station research plans. During the teleconference, space station experts demonstrate and discuss areas of scientific and commercial research being pursued on the ISS, the potential risks and benefits for companies investing in ISS research, research opportunities and how to participate, and the scientists and entrepreneurs who are involved in space research. Includes supporting print materials.

International Space Station Video Progress Report
10 minutes **1/2" VHS** 006.4-10V $10.00
Level: Grades 7–12

Outlines the assembly and docking sequence of the completed flights of the International Space Station. Also touches upon the logistics of forthcoming missions as the assembly process continues through completion.

Meet Me at the Station Video Series
Level: Grades 4–8

This is a new series on the International Space Station. The programs are available individually for $10.00 each. As additional programs are developed, they will be added to the series. Please check the Web site (*http://spaceflight.nasa.gov/gallery/video/station/mmats/index.html*) or call to find out if additional titles are available.

Meet Me at the Station Individual Program Descriptions

Program 1: Overview
15 minutes/2000 **1/2" VHS** 099.31-01V $10.00
Level: Grades 4–8 CLOSED CAPTIONED

This video provides an overview of the International Space Station (ISS). Topics discussed include: the story of space station, who is involved with the ISS project, what the ISS will be used for, dimensions, power supply, and the teamwork involved in this multinational program. Two activities are included in the video resource guide using science, mathematics, and geography concepts.

Mission to Mir
39 minutes/1997 **1/2" VHS** 006.4-22V $14.95
Level: Grades 4–Adult **DVD** 006.4-22D $20.00

A sweeping adventure which unites two former rival nations, Mission to Mir is an unprecedented tour of the Russian Space Station Mir. Filmed in space by American astronauts, "Mission to Mir" examines their relationships with the station's Russian cosmonauts as they live, work, and entertain in a zero-gravity environment. Join record-breaking space pioneer Shannon Lucid as she and her colleagues give Earth-bound audiences a unique look inside their weightless home against a panorama of spectacular space scenery. Copyrighted by the IMAX Corporation.

NASA CONNECT Video Series/2000–2001
Program 5: Functions and Statistics: International Space Station: Up to Us
30 minutes/2001 **1/2" VHS** 099.22-05V $10.00
Level: Grades 5–8 CLOSED CAPTIONED

In this episode of NASA CONNECT, students will learn about the International Space Station (ISS), why it is being built, and how it provides first-hand experiences with the space program. NASA engineers will discuss several components of the ISS, their functions, and the different types of research being conducted in the station's unique microgravity environment. Students will also discover how microgravity affects human beings in space and will observe NASA engineers using functions and statistics in their research on bone loss. By conducting classroom and online activities, students will make connections between NASA research and the mathematics, science, and technology they learn in their classroom. Produced by the NASA Langley Research Center's Office of Education. For more information, visit their Web site at *http://connect.larc.nasa.gov*

	Format	Item No.	Price
New Era of Discovery: Plans for Research on the Space Station			
60 minutes/1994	**1/2" VHS**	006.4-05V	$21.00

Highlights the first live videoconference, held on February 17, 1994, by the NASA Space Station program. Provides an overview of the plans, opportunities, and benefits of space-based research. Explains how the Space Station will provide a laboratory for research in life sciences, materials, fluid physics, combustion, and biotechnology research and technology development.

Station Reel Time			
10 minutes/1999	**1/2" VHS**	006.4-11V	$10.00
Level: Grades 3–8			

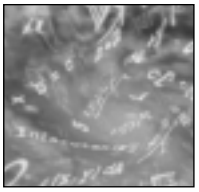
This two-part videotape consists of short programs highlighting different aspects of the International Space Station.

Program 1: Crew Return Vehicle
This program takes a look at some of the key features of the International Space Station Crew Return Vehicle, the X-38. The X-38 is compared to a lifeboat in space because it will be used to carry the crew back to Earth in the event of an emergency aboard the Space Station. It highlights the parafoil parachute used for landing, the automated landing system, and the shape and size of the spacecraft. Accompanied by NASA Educational Brief EB-1998-11-127-HQ/International Space Station Crew Return Vehicle: X-38.

Program 2: Power Systems
Examines how electricity will be generated on the International Space Station. The Space Station is the largest structure ever built in space. It will be powered by eight solar panels that collect energy from the Sun through the use of photovoltaic cells. Photovoltaic cells are used on Earth too, in toys, solar calculators, at school crossings, and many other places. Once the energy is collected, it will be used to charge batteries which will provide power to the Space Station when it is not in direct sunlight. Batteries are also used when more power is needed for experiments and research. The other half of the power produced will go directly to the laboratories and modules, or rooms of the Space Station. This power will also run the life support systems, which includes the air the astronauts will breathe, the food systems, and the temperature controls. Accompanied by NASA Educational Topic ET-1998-07-003-HQ/From Sunlight to Power: International Space Station Solar Arrays.

	Format	Item No.	Price

Liftoff to Learning: Mathematics of Space—Rendezvous
17 minutes/1998 **1/2" VHS** 012.0-23V $15.00
Level: Grades 5–12 CLOSED CAPTIONED
Application: Mathematics



Addresses the basic mathematical operations of spacecraft rendezvous in Earth orbit. Middle school mathematics students solve problems that may occur when the Space Shuttle docks with the Russian space station Mir. The video has stopping points to permit viewers to work the problems. Mission STS-84 is covered, with Commander Charles Precourt, Pilot Eileen Collins, Jean-Francois Clervoy, Edward Lu, Carlos Noriega, Elena Kondakova, Jerry Linenger, and Michael Foale. Includes a video resource guide.

NASA CONNECT Video Series/1999–2000
Purchase our 7-part series condensed onto 2 videotapes
210 minutes/2000 **1/2" VHS** 099.21 V $24.00
Level: Grades 4–8 CLOSED CAPTIONED

NASA CONNECT is an award-winning instructional series produced by the NASA Langley Research Center's Office of Education. It is designed to enhance the teaching of math, science, and technology in grades 4–8. Each program in the series uses NASA programs, projects, and researchers to illustrate the workplace applications of math and science. Programs are 30 minutes long and seek to establish a "connection" between the math, science, and technology concepts taught in the classroom and the math, science, and technology used every day by NASA researchers. NASA CONNECT supports the national math and science standards. Each program includes an educator's guide which is available in PDF format on the NASA CONNECT Web site, as well as Web-based, online, interactive components. The following seven programs are available individually or as a complete set. For more information, visit their Web site at *http://connect.larc.nasa.gov*

NASA CONNECT 1999–2000 Individual Program Descriptions

Program 1: Measurement of All Things: Tools of the Aeronautics Trade
In the first program, students will explore the concept of measurement and the tools used in measuring things while learning how engineers and scientists use measurement during the process of developing, designing, and testing airplanes.

Program 2: Measurement of All Things: Atmospheric Detectives
In this program, students learn how scientists use satellites, lasers, optical detectors, and wavelengths of light to measure the presence of certain gaseous elements, compounds, and aerosols in the Earth's atmosphere.

Program 3: Geometry of Exploration: Water Below the Surface of Mars
Students will learn how engineers and scientists use geometry in the solar system to navigate a spacecraft to Mars.

Program 4: Geometry of Exploration: Eyes Over Mars
Students will examine how the principles of geometry and linear and angular measurements are used to survey and map the Earth and planets such as Mars. Students will meet a surveyor who will explain how he surveys locations like football or soccer fields, describe the tools and techniques he uses, and show students how math and geometry are used in surveying. Students will also see how NASA researchers use geometric shapes to navigate spacecraft to Mars and how satellites, like the Mars Global Surveyor, and the principles of geometry are used to determine the elevation of land formations on Mars.

Program 5: Proportionality: The X-Plane Generation
Students will learn why scaling and proportion are important factors in spacecraft design. Additionally, students will learn to calculate ratios and portions; use the Internet and visit Norbert's lab; and make a model of NASA's X-33.

Program 6: Proportionality: Modeling the Future
In this program, students will continue to learn why scaling and proportion are important in the design of small, affordable transportation systems using math concepts of measurement, computation, ratios, and data visualization.

Program 7: Algebra: Mirror, Mirror on the Universe
Students will learn how algebra is used to explore the universe using math concepts of estimation and expressions, and by solving equations and word problems.

NASA CONNECT Video Series/2000–2001

Purchase our 5-part series condensed onto 2 videotapes
150 minutes/2000 **1/2" VHS** 099.22 V $24.00
Level: Grades 4–8 CLOSED CAPTIONED

NASA CONNECT is a series of five 30-minute instructional distance learning (satellite and television) programs for students in grades 5–8. This series is produced by the NASA Langley Research Center's Office of Education, is endorsed by the National Council of Teachers of Mathematics (NCTM), and supports the national mathematics, science, and technology standards. Programs in the 2000–2001 NASA CONNECT Series use proportional reasoning as the "integrative thread" that "connects" mathematics topics in each program and in the series as a whole. Each NASA CONNECT program includes a lesson, a lesson (teacher) guide, a student activity or experiment, and Web-based component. The national mathematics, science, and technology standards, concepts, and processes are contained in the lesson guide for each of the five programs. The lesson guide includes a background section, step-by-step instructions for the student activity or experiment, and includes (print and online) resources for teachers and students. The five programs are available individually for $10.00 each or as a 5-part set for $24.00. For more information, visit their Web site at *http://connect.larc.nasa.gov*

NASA CONNECT 2000–2001 Individual Program Descriptions

Program 1: Measurement, Ratios, and Graphing: 3, 2, 1 Crash!
In this program, students will learn the history of the National Aeronautics and Space Administration (NASA) and will discover how NASA Langley Research Center improves aircraft performance and safety by conducting extreme tests such as crashing planes, skidding tires, and blasting water. Students will observe NASA engineers using measurement, ratios, and graphing to make predictions and draw conclusions during their extreme tests. Students will learn how NASA researchers (1) measure and collect data, (2) develop ratios and graphs to analyze their data, (3) compare their results, and (4) predict possible solutions for their real-world problems.

Program 2: Geometry and Algebra: Glow With the Flow
Students will learn about the force of drag and how NASA engineers use models and glowing paints to see how air flows over vehicles in a wind tunnel. Students will also discover how the blended wing body (BWB), a concept super jumbo jet that resembles a flying wing, will affect air travelers of the future. Students will observe NASA engineers using geometry and algebra when they measure and design models to be tested in wind tunnels. By conducting classroom and online activities, students will make connections between NASA research and the mathematics, science, and technology they learn in their classroom.

Program 3: Patterns, Functions, and Algebra: Wired for Space
Students will learn how patterns, functions, and algebra can help NASA engineers design new ways of propelling spacecraft and how electricity and magnetism are being used to replace the fuel-consuming rocket propulsion commonly used to deliver a push to spacecraft. Students will discover three projects that use electromagnetism in a dynamic way: the Magnetic Levitation Launch System (MagLev), the Propulsive Small Expendable Deployer System (ProSEDS), and the student-designed Icarus satellite. Students will observe NASA engineers using algebra to design and test the Icarus satellite. Through classroom and online activities, students will make connections between electricity and magnetism, and between NASA research and the mathematics, science, and technology they learn in their classroom.

Program 4: Data, Analysis, and Measurement: Ahead, Above the Clouds
In this program, students will learn how NASA scientists develop technologies to better understand our planet by predicting severe weather, tracking clouds, and monitoring pollutants in the air.

Program 5: Functions and Statistics: International Space Station: Up to Us
Students will learn how ground research plus space research equals true science as international researchers anticipate working together onboard the International Space Station.

NASA CONNECT Video Series/2001–2002
Program 1: Measurement, Ratios, and Graphing: Safety First
30 minutes/2001 **1/2" VHS** 012.0-19V $10.00
Level: Grades 5–8 CLOSED CAPTIONED

In the first program in this series, students will learn about NASA's Aviation Safety Program and how engineers are testing aircraft at extreme angles in wind tunnels to make sure they remain a safe form of transportation for all future air travelers. They will also learn about NASA FutureFlight Central, a virtual facility that simulates our Nation's airports in real time, allowing air traffic controllers, pilots, and airport personnel to interact with each other and test new technologies. Students will observe NASA engineers using mathematics to predict airplane behavior and to analyze date. By conducting hands-on and Web activities, students will make connections between NASA research and the mathematics, science, and technology they learn in their classrooms.

NASA CONNECT Video Series/2001–2002
Program 3: Geometry and Algebra: The Future of Flight Equation
30 minutes/2001 **1/2" VHS** 012.0-18V $10.00
Level: Grades 5–8 CLOSED CAPTIONED

In Geometry and Algebra: The Future Flight Equation, students will learn how NASA engineers develop experimental aircraft. They will learn about the Hyper-X Research Vehicle, an experimental plane that uses scramjet engine technology to propel itself to ten times the speed of sound. Students will understand how the Hyper-X is part of the Future Flight Equation. They will observe NASA engineers using geometry and algebra when they measure and design models to be tested in wind tunnels. By conducting hands-on and Web activities, students will make connections between NASA research and the mathematics, science, and technology they learn in their classrooms.

Project Mathematics! Early History of Mathematics
30 minutes/2000 **1/2" VHS** 012.0-09V $29.95
Level: Grades 9–12 CLOSED CAPTIONED

This 30-minute videotape traces some of the landmarks in the early history of mathematics—from Babylonian clay tablets produced some 5,000 years ago, when the calendar makers calculated the onset of the seasons—to the development of calculus in the 17th century. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution. For more information, visit their Web site at *http://www.projectmathematics.com*

Project Mathematics! Early History of Mathematics Program Guide and Workbook
30 pages **Print** 012.0-09P $4.95

Begins with a brief outline of the contents of the above-mentioned videotape, followed by suggestions of activities that can be done prior to showing the tape. The guide is divided into sections corresponding to capsule subdivisions in the tape. Each section summarizes important points and contains exercises that can be used to strengthen understanding. Photocopies of this workbook may be made for educational use.

Project Mathematics! Polynomials
25 minutes/1991 **1/2" VHS** 012.0-04V $29.95
Level: Grades 9–12 CLOSED CAPTIONED

Opens by showing examples of polynomial curves that appear in real life, followed by a systematic description of polynomials by degree. Uses computer animation to discuss linear, quadratic, and cubic polynomials, and addresses the intersections of lines and parabolas. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

	Format	Item No.	Price
Project Mathematics! Polynomials Program Guide and Workbook			
30 pages	**Print**	012.0-04P	$4.95
Project Mathematics! Similarity			
25 minutes/1990	**1/2″ VHS**	012.0-03V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Explains similarity with computer animation. Shows examples of similar objects from real life. Introduces scaling, the basis of all measurement, and shows its use in geometry, science, and technology. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! Similarity Program Guide and Workbook			
30 pages	**Print**	012.0-03P	$4.95
Project Mathematics! Sines and Cosines, Part I			
28 minutes/1992	**1/2″ VHS**	012.0-05V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Introduces the topic of trigonometry. The sine and cosine are first derived from the unit circle, and then their basic properties and identities are explored. The use of sine and cosine in the description of harmonic motion is illustrated visually and audibly with an electronic synthesizer and with musical instruments. The periodic nature of the sine wave is discussed, and the traditional triangular derivation of the sine and cosine is presented. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! Sines and Cosines, Part I Program Guide and Workbook			
30 pages	**Print**	012.0-05P	$4.95
Project Mathematics! Sines and Cosines, Part II			
30 minutes/1993	**1/2″ VHS**	012.0-06V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Focuses on the use of sines and cosines in trigonometry, with special emphasis on the laws of both cosines and sines. They enable us to find all parts of a triangle if three parts are known and at least one of them is a side. Applications are described in astronomy, navigation, and surveying by triangulation. One of the major triumphs of surveying by triangulation is the survey of India, which took more than a century to complete. The program describes how the survey was done and how the height of Mt. Everest was determined. The program also outlines a brief history of surveying instruments, from the dioptra of ancient times to orbiting satellites of modern times. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! Sines and Cosines, Part II Program Guide and Workbook			
30 pages	**Print**	012.0-06P	$4.95
Project Mathematics! Sines and Cosines, Part III			
30 minutes/1994	**1/2″ VHS**	012.0-07V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Relates the sine and cosine of an angle with the lengths of chords on a circle. This leads to a derivation of addition formulas for determining the sine and cosine of a sum of two angles. One application shows that a combination of a sine wave and a cosine wave of the same frequency is another sine wave, possibly shifted. Another application shows how the addition formulas make it possible to determine exact expressions for sines and cosines of many angles in terms of square roots of integers. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

	Format	Item No.	Price
Project Mathematics! Sines and Cosines, Part III Program Guide and Workbook			
30 pages	**Print**	012.0-07P	$4.95
Project Mathematics! The Story of Pi			
25 minutes/1990	**1/2" VHS**	012.0-02V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Explains the story of pi with computer animation. The tape weaves a historical perspective, showing how the number pi (the ratio of the circumference to the diameter of any circle) appears in formulas for round objects and in contexts that seem to have no relation to geometry. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! The Story of Pi Program Guide and Workbook			
30 pages	**Print**	012.0-02P	$4.95
Project Mathematics! The Theorem of Pythagoras			
20 minutes/1988	**1/2" VHS**	012.0-01V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Explains the Pythagorean Theorem using computer animation. Shows real-life problems that can be solved using the Pythagorean Theorem, illustrates several different animated proofs, and weaves a historical perspective. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! The Theorem of Pythagoras Program Guide and Workbook			
30 pages	**Print**	012.0-01P	$4.95

Begins with a brief outline of the contents of the above-mentioned videotape, followed by suggestions of activities that can be done prior to showing the tape. The guide is divided into sections corresponding to capsule subdivisions in the tape. Each section summarizes important points and contains exercises that can be used to strengthen understanding. Photocopies of this workbook may be made for educational use.

Project Mathematics! The Tunnel of Samos			
30 minutes/1995	**1/2" VHS**	012.0-08V	$29.95
Level: Grades 9–12	CLOSED CAPTIONED		

Tells the story of a Greek engineer, Eupalinos of Megara. In the 6th century B.C., Eupalinos excavated a 1,000-meter tunnel straight through the heart of a mountain located on the Island of Samos in the Aegean Sea. This program describes the method used, as well as alternate methods proposed by scholars in modern times. The program also shows that the problem of delivering fresh water to large populations has been an ongoing human endeavor since ancient times. Copyrighted by and reproduced with permission from the California Institute of Technology. For educational use only. Not for international distribution.

Project Mathematics! The Tunnel of Samos Program Guide and Workbook			
30 pages	**Print**	012.0-08P	$4.95

Begins with a brief outline of the contents of the above-mentioned videotape, followed by suggestions of activities that can be done prior to showing the tape. The guide is divided into sections corresponding to capsule subdivisions in the tape. Each section summarizes important points and contains exercises that can be used to strengthen understanding. Photocopies of this workbook may be made for educational use.

	Format	Item No.	Price
Space Flight: The Application of Orbital Mechanics 35 minutes/1989 Level: Adult	**1/2" VHS**	012.0-20V	$16.00

Explains in detail planetary motion and orbital mechanics. Following a brief look at early theories on planetary orbits, animation is used to illustrate various mathematical equations and theories, including Kepler's Laws of Planetary Motion and Newton's Laws of Motion. Explains many terms associated with orbits, including perigee, apogee, eccentricity, orbital inclination, launch window, and so on. Also includes animation of a full Earth rotating, planets in orbit around the Sun, satellites in orbit, and the Hubble Space Telescope. Animation is interspersed with footage from Shuttle missions, including launches, landings, Earth views, satellite deploys, and EVAs.

	Format	Item No.	Price
NASA CONNECT Video Series/1998–1999 **Program 4: Recipes for the Future** 30 minutes/1999 Level: Grades 4–8	**1/2" VHS**	099.20-04V	$16.00

"Recipes for the Future" focuses on the physical properties of materials, mixtures, and compounds. Students are introduced to the various measuring and testing techniques used to develop "composite" materials for airplanes and space vehicles. NASA researchers will show students how recipes for the future begin with the identification of requirements, the selection of proper ingredients, and the application of proper processing, fabrication, and analysis procedures. Students will conduct an experiment designed to investigate the strength and maximum deflection of a composite material with and without the use of a reinforcer.

NASA CONNECT Video Series/1998–1999 **Program 5: Quieting the Skies** 30 minutes/1999 Level: Grades 4–8	**1/2" VHS**	099.20-05V	$16.00

NASA engineers and scientists are trying to design airplanes to run as quietly as cars. In this program, students will learn the basics: what sound is, what makes sound, how sound affects us and the environment, and how we measure sound. They will also learn some of the techniques being used by NASA to reduce aircraft noise. The lesson and classroom experiment will involve students in the creation, visualization, and measurement of sound.

Seeing Beyond the Obvious: Understanding Perceptions in Everyday and Novel Environments 46 minutes/1990 Level: Adult	**1/2" VHS**	008.0-07V	$21.00

Motivates student interest in basic issues of visual perception by showing how the development of current visual display technology has affected aerospace applications. Includes an instructor's guide.

	Format	Item No.	Price

Earth to Orbit Engineering Design Challenges: Thermal Protection Systems
15 minutes — **1/2" VHS** — 012.0-26V — $15.00
Level: Grades 5–12 — CLOSED CAPTIONED

Overview for teachers participating in the Earth to Orbit Thermal Protection Challenge. The first section of the video is designed for the teacher, explaining the goal of the program and how to set it up in their classroom. The second section is to be shown in class to the students as an introduction to the lesson.

Flight Testing Newton's Laws
134 minutes/1999 — **1/2" VHS** — 012.0-25V — $24.00
Level: Grades 9–12

Uses aircraft to stimulate students' interest in the physical sciences and mathematics during the course of 10 lessons. The main emphasis lies in showing how Newton's three laws of motion apply to flight-testing an aircraft. Complementary areas of trigonometry, vector addition, weight and balance, along with resolution of forces, are also employed. Includes an educator's guide that is presented in the format of a flight instructor's manual to help guide teacher and student through each lesson. The guide is also available online at *http://trc.dfrc.nasa.gov/trc/ntps/index.html*

Liftoff to Learning: All Systems Go
34 minutes/1992 — **1/2" VHS** — 006.3-11V — $16.00
Level: Grades 5–12 — CLOSED CAPTIONED

Presents the astronauts onorbit during the first Spacelab Life Sciences mission, discusses some of the physiological changes that occur in the human body while in a microgravity environment, and attempts to answer important questions on how the body readapts to Earth's environment. The videotape shows research conducted aboard the Space Shuttle on six systems that examine the heart, lungs, blood, muscles, cells, and the immune system, among others. This program is segmented, enabling teachers to extract topics that are most relevant to current classroom studies.

Liftoff to Learning: Microgravity
24 minutes/1996 — **1/2" VHS** — 012.0-22V — $16.00
Level: Grades 5–12 — CLOSED CAPTIONED

Focuses on four scientific disciplines in microgravity studies: fluid physics, materials science, biotechnology, and combustion. Experiments within these disciplines explore how the effects of buoyancy-driven convection and sedimentation, seen in ground-based laboratories, are diminished in space, allowing scientists to expand their knowledge in these areas. "Microgravity" describes the restrictions that gravity imposes on scientific experimentation and how they can be greatly reduced in the exciting research environment of the Space Shuttle, and later on in the International Space Station.

Liftoff to Learning: Tethered Satellite: A Videotape for Physics and Physical Science
Part 1: 22 minutes/1995 — **1/2" VHS** — 012.0-21V — $16.00
Part 2: 19 minutes/1997 — CLOSED CAPTIONED
Level: Grades 9–12

Part 1: Tethered Satellite Forces and Motion
Describes the tethered satellite concept and shows how the satellite is deployed and extended in space. The mathematics describing the forces acting on the tethered satellite/Space Shuttle orbiter system is presented.

Part 2: Electrical Circuits in Space: The Electrodynamics of the Tethered Satellite
Demonstrates how the tethered satellite and the Space Shuttle orbiter interact with Earth's magnetic field to produce an electric current. Future applications of the tethered satellite/Space Shuttle orbiter system as a motor are described.

	Format	Item No.	Price

Liftoff to Learning: Toys in Space II
37 minutes/1993 — **1/2" VHS** — 006.3-14V — $16.00
Level: Grades K–12 — CLOSED CAPTIONED

Provides a hands-on way for students to investigate the principles of mathematics and science that make many common toys function. The Space Shuttle crew invite students to experiment with similar toys in their classroom and hypothesize how these same toys will operate in microgravity. Scenes of the STS-54 astronauts operating the toys in space serve as data for students to confirm or reject their hypotheses. Includes a comprehensive guide.

Microgravity Demonstrator, The
21 minutes/1998 — **1/2" VHS** — 012.0-24V — $15.00
Level: Grades 5–12

Presents the Microgravity Demonstrator, a tool to create microgravity conditions in your classroom. A series of demonstrations is used to provide a dramatically visual, physical connection between free-fall and microgravity conditions, and to understand why various types of experiments are performed under microgravity conditions.

NASA "Why?" Files Video Series/2000–20001
Program 2: The Case of the Barking Dogs
30 minutes/2000 — **1/2" VHS** — 099.32-02V — $16.00
Level: Grades 3–5 — CLOSED CAPTIONED

In this program, students are invited to actively join the tree house detectives as they investigate the "Case of the Barking Dogs". The tree house detectives accept the challenge of determining why dogs in the surrounding neighborhoods have unexpectedly started barking early in the morning and late at night. Using scientific inquiry, our detectives discover what is causing the neighborhood dogs to bark. In determining the "why," the detectives learn about sound: what it is, how it is transmitted, and how humans and animals hear. While solving the case, the tree house detectives learn that determining the source of the barking requires the use of logic and "sound" reasoning.

NASA "Why?" Files Video Series/2000–20001
Program 3: The Case of the Electrical Mystery
30 minutes/2001 — **1/2" VHS** — 099.32-03V — $16.00
Level: Grades 3–5 — CLOSED CAPTIONED

In this program, students are invited to actively join the tree house detectives as they investigate the "Case of the Electrical Mystery". The tree house detectives are baffled: "Why is the electricity on in the tree house, and why is the electricity off in all the houses on their block?" They accept the challenge to solve the problem of the "electrical mystery". Using scientific inquiry, our detectives determine the cause of this mystery. In solving this case, our detectives learn about electricity and how it is generated; they also learn about electrical current, circuits, and distribution. While solving the case, the tree house detectives discover that the "electrical mystery" is not simply an "open" and "closed" case.

	Format	Item No.	Price
Physics of Toys in Space 51 minutes/1993 Level: Grades K–12	**1/2" VHS**	006.3-12V	$21.00

Presents the astronauts onboard Space Shuttle mission STS-54 using the laws of physics to demonstrate how toys perform in microgravity. The astronauts answer questions from four elementary schools while performing experiments. The featured toys include: swimming fish, frog, and submarine; balloon helicopter; gyroscope and gravitron; friction-engine car and circular track; magnetic marbles; Rat Stuff, the flipping mouse; basketball and hoop; and paper boomerang. Includes a video resource guide.

Skylab Six-Part Series
Purchase our 6-part series condensed onto 1 videotape

1 1/2 hours/1974	**1/2" VHS**	099.91 V	$24.00

Covers the world's first laboratory in space. During the summer of 1973, astronauts Alan Bean, Jack Lowsna, and Dr. Owen Garriott spent almost two months aboard the Skylab spacecraft. During this mission, Dr. Garriott conducted a number of science experiments specifically intended for high school science students. The programs highlight these experiments and are accompanied by a printed teacher's guide.

Skylab Individual Program Descriptions

Program 1: Zero-G
Provides an introduction to the Skylab environment, a laboratory above the Earth's atmosphere, effectively free from the Earth's gravitational field. Dr. Garriott briefly explains the dynamics of Earth orbit and the meaning of zero-gravity (weightlessness), and shows brief demonstrations of phenomena that can be observed only in zero-gravity.

Program 2: Conservation Laws in Zero-G
Demonstrates the concept of angular momentum conservation from the zero-gravity environment of the orbiting Skylab space station. Illustrations in space are related to more familiar examples on Earth. Also shows how the spinning motion of a satellite changes to tumbling by dissipation of rotational energy while angular momentum is conserved.

Program 3: Fluids in Weightlessness
Explores numerous fluid phenomena in orbit, including surface tension, cohesion, adhesion, and instability. Demonstrates how collisions and splittings of liquid drops in orbital zero-gravity can model systems ranging in size from an atomic nucleus to a galaxy.

Program 4: Gyroscopes in Space
Uses gyroscope demonstrations in the zero-gravity Skylab orbit to explain both the principles and applications of gyroscopes on Earth. The fascinating motion of gyroscopes is useful in everyday life and essential to aviation and space travel.

Program 5: Magnetism in Space
Opens with a montage of spectacular views of Skylab in orbit. Reviews familiar aspects of magnetism, touches lightly on its history, and explores the striking behavior of magnets in weightlessness.

Program 6: Magnetic Effects in Space
Demonstrates the effect of the Earth's magnetic field on small bar magnets Dr. Owen Garriott carried up in Skylab. He explains the tendency of magnets to line up with the Earth's magnetic field and shows the oscillating motions of magnets in various combinations and positions. Additionally, several demonstrations are performed with a nut spinning in space.

	Format	Item No.	Price
Toys in Space 17 minutes/1985 Level: Grades 4–8	**1/2" VHS**	006.3-06V	$15.00

Shows elementary students hypothesizing about how selected toys will perform in the weightless conditions of space. Classroom discussion is followed by footage of astronauts demonstrating these toys during a 1985 Space Shuttle flight. Four toys are highlighted: top, ball and jacks, slinky, and yo-yo.

Toys in Space Activity Kit 10-piece set	**KIT**	006.3-07P	$30.00

Contains the 10 toys Shuttle astronauts carried with them on STS 51-D. Designed to be used with the "Toys in Space" videotape programs. Please refer to our Activity Kits/Space Memorabilia section for detailed ordering information.

Toys in Space II Activity Kit 7-piece set	**KIT**	006.3-12P	$25.00

Contains seven of the toys Shuttle astronauts carried with them on mission STS-54. Designed to be used with the physics of "Toys in Space" and "Toys In Space II" videotape programs. Contains the following toys: car and track, basketball with hoop, magnetic marbles, swimming toy, gravitron, flipping toy, and balloon helicopter. Please refer to our Activity Kits/Space Memorabilia section for detailed ordering information.

Toys in Space: Mission 51-D Highlights 60 minutes/1985 Level: Grades 4–Adult	**1/2" VHS**	006.3-07V	$21.00

Offers 10 mini-segments during which astronauts give detailed explanations of how toys operated in the microgravity environment of the Space Shuttle. Demonstrations are followed by excerpts from the STS 51-D postflight press conference.

	Format	*Item No.*	*Price*

DESTINATION TOMORROW: Bringing the Future into Focus Video Series/2000–2001

	1/2" VHS (Spanish Version)	099.36 V	$24.00
150 minutes/2000	**1/2" VHS**	099.35 V	$24.00
Level: Grades 9–Adult	CLOSED CAPTIONED		

"NASA's Destination Tomorrow: Bringing the Future into Focus" is designed for educators, parents, and lifelong learners by NASA Langley Research Center's Office of Education. This educational, informative program builds on the premise that much of NASA's aeronautical research focuses on creating today's knowledge to solve tomorrow's problems. For more information, please visit the Destination Tomorrow Web site at *http://destination.larc.nasa.gov*

DESTINATION TOMORROW Individual Program Descriptions

Program 1: Consists of five exciting segments. In the "Behind the Scenes" segment, viewers will learn about synthetic vision research in the Aviation Safety Program; in the "Tech Watch" segment, viewers gain insight into the new fetal heart monitor technology; viewers revisit the idea of lunar-orbit rendezvous as part of the "Retrospective" segment; viewers see how Light Detection and Ranging (LIDAR) is used onboard aircraft during the "On the Runway" segment; and viewers find out how an airplane flies during the "How it Works" segment.

Program 2: Consists of five exciting segments. In the "Behind the Scenes" segment, viewers will learn how the Icing Research Tunnel at NASA Glenn Research Center is helping to save lives; in the "Tech Watch" segment, viewers gain insight into the Periodontal Probe that is making pain-free dentistry a reality; viewers meet Richard Whitcomb, inventor of the "Area Rule" concept as part of the "Retrospective" segment; viewers see how NASA researchers are designing planes to fly more like birds in the "On the Runway" segment; and viewers find out how sensors work on the "How it Works" segment.

Program 3: Communicates knowledge resulting from NASA's aeronautics and space technology programs. NASA researchers discuss new and developing technologies that will benefit current and future generations. Excellent resource for high school and adult learners. This program shows how videogames can help students with Hyperactive Attention Deficit Disorder control their behavior; a new technology that is making air traffic safer and more efficient; and highlights an engineer who developed a wingless vehicle to revolutionize spaceship design.

Program 4: Communicates knowledge resulting from NASA's aeronautics and space technology programs. NASA researchers discuss new and developing technologies that will benefit current and future generations. This program displays NASA's Hyper-X Program, a hyper-trip to space is a little closer with a new scram jet engine design; the designing of lightweight materials stronger than steel; and a retired NASA engineer who was the father of hang gliding. Excellent resource for high school and adult learners.

Program 5: This program communicates knowledge resulting from NASA's aeronautics and space technology programs. NASA researchers discuss new and developing technologies that will benefit current and future generations. Excellent resource for high school and adult learners.

Liftoff to Learning: Let's Talk Robotics

14 minutes/1998	**1/2" VHS**	011.0-04V	$10.00
Level: Grades 5–12	CLOSED CAPTIONED		

Offers an introduction to the use of robots in space exploration. Astronauts demonstrate robotic arms and free-flying cameras on the Space Shuttle. Viewers also get to see some of NASA's robotics laboratories. The Mars Sojourner robot is featured, along with middle and high school students using robots.

	Format	Item No.	Price
NASA "Why?" Files Video Series/2000–2001			
240 minutes	**1/2" VHS**	099.32 V	$32.00
Level: Grades 3–5	CLOSED CAPTIONED		

The NASA "Why?" Files Series is a standards-based, technology-focused, distance learning initiative designed to integrate and enhance the teaching of math, science, and technology in grades 3–5. The 2000–2001 series of four 60-minute programs uses problem-based learning and scientific inquiry, including the scientific method and science process skills, to introduce students to the excitement and exploration of real-world mathematics, science, and technology. The NASA "Why?" Files is video- and Web-based, and includes a resource-rich teacher guide. The series combines the leading-edge technology of the Web with the content-driven, instructional quality of video programming. The user-friendly Web site engages students, teachers, and parents in the learning experience by linking them to a world of formal and informal "learning opportunities" that include NASA programs, projects, and researchers. The presence of educational technology in the series mirrors the expanding application and integration of mathematics, science, and technology in the classroom. The four programs are available individually for $16.00 each or as a 4-part set for $32.00. For more information, visit their Web site at *http://whyfiles.larc.nasa.gov*

NASA "Why?" Files/2000–2001 Individual Program Descriptions

Program 1: The Case of the Unknown Stink
In this program, students are invited to join the tree house detectives as they investigate "The Case of the Unknown Stink". The tree house detectives accept the challenge of trying to find the source of an unpleasant odor that is invading surrounding neighborhoods. To determine the source of the stink, our detectives learn about the sense of smell: what it is, how humans and animals smell, and how wind speed and direction influence the movement of odor. They also learn how NASA's Atmospheric Science research can help solve the case. While investigating the case, the tree house detectives learn that the source of the "unknown stink" is "right under their very noses".

Program 2: The Case of the Barking Dogs
In this program, students are invited to actively join the tree house detectives as they investigate the "Case of the Barking Dogs". The tree house detectives accept the challenge of determining why dogs in the surrounding neighborhoods have unexpectedly started barking early in the morning and late at night. Using scientific inquiry, our detectives discover what is causing the neighborhood dogs to bark. In determining the "why", the detectives learn about sound: what it is, how it is transmitted, and how humans and animals hear. While solving the case, the tree house detectives learn that determining the source of the barking requires the use of logic and "sound" reasoning.

Program 3: The Case of the Electrical Mystery
In this program, students are invited to actively join the tree house detectives as they investigate the "Case of the Electrical Mystery". In this program, students are invited to actively join the tree house detectives as they investigate "The Case of the Electrical Mystery". The tree house detectives are baffled: "Why is the electricity on in the tree house, and why is the electricity off in all the houses on their block?" They accept the challenge to solve the problem of the "electrical mystery". Using scientific inquiry, our detectives determine the cause of this mystery. In solving this case, our detectives learn about electricity and how it is generated; they also learn about electrical current, circuits, and distribution. While solving the case, the tree house detectives discover that the "electrical mystery" is not simply an "open" and "closed" case. Broadcast date February 24, 2001.

Program 4: The Case of the Challenging Flight
In this program, students are invited to actively join the tree house detectives as students from a rival school challenge them to compete in a flight contest. The tree house detectives accept their rival's challenge to compete in the "design it, build it, and fly it" competition. Using scientific inquiry, our detectives design and build an airplane by using common household materials and learn about the four basic components of flight: lift, thrust, drag, and gravity. While building their airplane, the tree house detectives use what they've learned to design and build an "egg-stra-ordinary" flying machine. Broadcast date March 1, 2001.

	Format	Item No.	Price

NASA "Why?" Files Video Series/2001–2002
Program 3: The Case of the "Wright" Invention
60 minutes/2001 **1/2" VHS** 011.0-06V $16.00
Level: Grades 3–5 CLOSED CAPTIONED

When the tree house detectives hear a report on KSNN about a young inventor's contest, they decide it might be their next case. Thus begins The Case of the "Wright" Invention. The tree house detectives are not even quite sure what an invention is, much less how to create one. Seeking some advice, they visit Dr. D, a retired science professor, who helps the tree house detectives understand that the process of invention is similar to the scientific method. Armed with new confidence, they set out to create a "bug" list of ideas to find a problem to solve! As the tree house detectives learn about inventors, they get a little help from mysterious sources, Orville and Wilbur Wright. The tree house detectives are not sure whether these brothers are real or just actors. The tree house detectives also visit a young inventor, Lindsey Clements, who shows them that even kids can be inventors. NASA researchers and other community experts also help the tree house detectives learn how to plan, design, build, and test their invention. They discover that inventing is not as easy as they thought, even for Orville and Wilbur Wright.

Optics—Making Light Work
20 minutes/1993 **1/2" VHS** 011.0-03V $21.00
Level: Grades 4–9

Demonstrates that the basic science concepts taught in the classroom have applications in the very specialized work done by NASA. Includes a teacher's guide with hands-on math and science activities.

	Format	Item No.	Price

Chandra X-Ray Observatory

CD-ROM 400.1-35 $5.00

Level: Grades 5–12 Windows/Macintosh

Includes Chandra images with short descriptions organized into categories (SNP, black holes, etc.) with background information. The Chandra X-Ray Sky Map lets you explore the X-Ray sky with an interactive map. Includes background information on constellations with links to the Chandra images and an introduction to the Chandra X-Ray Observatory, its mission, and hardware. Also, there is a glossary of terms, which is a reference section defining scientific words and phrases used throughout the CD-ROM. For additional information, visit the Chandra Web site at *http://chandra.harvard.edu/edu/cd*

Comet Halley Returns

29 minutes/1986 **1/2" VHS** 010.1-01V $16.00

Level: Grades 11–Adult

Details Comet Halley's 1985–1986 rendezvous with the Earth and the Sun. Dr. Robert D. Chapman is interviewed at NASA's Lewis Research Center about Comet Halley's next visit to the vicinity of the Earth and the Sun.

Comet Impact '94

20 slides with descriptions **SLIDE** 100.0-46 $8.50

Features Hubble Space Telescope views of several of the fragment impacts when Comet Shoemaker-Levy 9 collided with Jupiter in July 1994. Includes additional images from other observatories.

Deep Space: Featuring the Hubble Space Telescope Images

CD-ROM 400.0-83 $25.00

Mac/Windows 3.1/Windows '95

Provides an interactive menu that allows you to select from categories of deep space objects, such as galaxies and star clusters. Includes a complete collection of Hubble images from the Space Telescope Science Institute, 16 planet views, and a glossary. Produced and copyrighted by Finley-Holiday Film Corporation.

Hubble Space Telescope's Greatest Hits

20 slides with descriptions **SLIDE** 100.0-62 $8.00

Includes some of the most spectacular images ever captured by the Hubble Space Telescope, including Venus, Saturn, star clusters, black holes, and peculiar galaxies. All images in this set are in the public domain. Produced by Finley-Holiday Film Corporation.

Imagine the Universe/StarChild

CD-ROM 400.1-30 $5.00

Level: Grades K–8/2001 Windows/MAC

This CD-ROM captures three NASA astronomy and space science Web sites as they existed in January 2001. Imagine the Universe contains information on the exotic and energetic objects in our universe, as well as introductions to how astronomers study the x-ray and gamma ray universe. StarChild provides general astronomy and space travel information at two reading levels (for K–8). Each of these sites contains its own learning adventure full of facts, fun, beautiful images, movies, and great education resources for teachers. The CD-ROM also includes Astronomy Picture of the Day for the year 2000—every day a different picture of the cosmos with a description written by a professional astronomer. For more information, send e-mail to *itu@heasarc.gsfc.nasa.gov* or visit the Imagine the Universe Web site at *http://imagine.gsfc.nasa.gov*

NASA CONNECT Video Series/1999–2000
Program 7: Algebra: Mirror, Mirror on the Universe

30 minutes/2000 **1/2" VHS** 099.21-07V $10.00

Level: Grades 4–8 CLOSED CAPTIONED

Produced by NASA Langley Research Center's Office of Education, this is the sixth of seven programs in the 1999–2000 NASA CONNECT Series. CONNECT is designed to enhance the teaching of math, science, and technology in grades 4–8 using aeronautics and space technology as its organizing theme. In this program of NASA CONNECT, students will learn how algebra is used to explore the universe, using math concepts of estimation and expressions, and solving equations and word problems.

NASA's Hubble Space Telescope: The Best Is Yet to Come
8 minutes/1994 **1/2" VHS** 010.1-11V $10.00

Encapsulates the come-from-behind human endeavor of restoring the Hubble Space Telescope to its original scientific potential. Features the most visually striking moments while interweaving stories told by the participants. This mission succeeded because of many individuals' efforts—their dedication in spite of failures, teamwork, relentless planning, and rehearsing, as well as the enthusiasm of the young scientists and engineers. The tape expresses emotions felt for the excitement of discovery and the beauty of science at the frontier of knowledge. Produced by BDM Feder, Inc. Communications Group.

New Solar System, The
60 minutes/1996 **1/2" VHS** 010.1-15V $19.95

Shows the story of our solar system as never before presented. Featuring the most complete collection of visuals ever assembled, this educational program takes you on a complete tour of the solar system, including a Jupiter-comet crash movie. Copyrighted by Finley-Holiday Films. Public performance rights for schools and libraries. All other rights reserved.

The Night Sky Series
7-part series condensed onto 1 videotape
2 hours/1993 **1/2" VHS** 099.97 V $24.00
Level: Grades 6–12

Produced at NASA's Jet Propulsion Laboratory (JPL). The series describes astronomy and space science topics, including the visibility of astronomical events, planets, stars and constellations, eclipses, observing tips, computer software, spacecraft missions, and special events.

The Night Sky Individual Program Descriptions

Program 1: Types of Telescopes
Shows and explains refractors, binoculars, and the Newtonian, Cassegrain, and Schmidt Cassegrain telescopes.

Program 2: A Binocular Tour Through the Night Sky
Discusses the operating principles of binoculars and the types of objects that can be viewed.

Program 3: Observing the Night Sky
Shows "star parties" and night sky observing materials, such as star charts, from the Stoney Ridge Observatory in the southern California mountains.

Program 4: A Conversation with John Dobson
Presents the inventor of the "Dobsonian" low-cost telescope and founder of the San Francisco Sidewalk Astronomers discussing his work to popularize astronomy.

Program 5: Phases and Craters of the Moon
Discusses phases of the Moon and shows a simple classroom demonstration to accurately simulate phases. Another demonstration, that can be easily duplicated, illustrates impact cratering.

Program 6: Meteors and Asteroids
Previews the 1993 Perseid meteor shower, including viewing tips and how to photograph the event. Because the Perseid meteor shower occurs annually, most of this information will be useful for years. A preview of the Galileo spacecraft encounter of the asteroid Ida is discussed as well.

Program 7: The Night Sky
Shows the stars, planets, and constellations for August 1993.

Small Bodies, Big Impact—Cool Comets, Awesome Asteroids: NASA . . . On the Cutting Edge Videoconference

60 minutes/1999 **1/2" VHS** 010.1-16V $16.00

Program 1: Cool Comets
"Cool Comets" looks at the dirty snowballs which turn into the beautiful celestial bodies we can see from Earth. Viewers will go behind the scenes to discover high-tech NASA missions that will capture comet dust samples and bring them back to Earth. The samples will give us new information about comets and help us understand the origins of our solar system. This is a videotape of a live broadcast on March 10, 1999.

Program 2: Awesome Asteroids
"Awesome Asteroids" looks at the rocky bodies we call asteroids, one of which may have caused the extinction of the dinosaurs. Viewers will learn about space missions to orbit and map a near-Earth asteroid for the first time, helping to reveal clues about the formation of our solar system. This is a videotape of a live broadcast on March 11, 1999.

StarGaze: Hubble's View of the Universe

2000 **DVD** 002.4-09D $21.00

StarGaze brings the beauty and majesty of the universe to your home theater directly from the Hubble Space Telescope. With over an hour of the most incredible images of the universe you'll ever see, plus Dolby Digital and DTS surround sound music from 2002, StarGaze will quickly become a favorite in your DVD collection. StarGaze is an award-winning hybrid DVD-Video, DVD-ROM, and WebDVD title that presents the beauty of the universe as seen from the Hubble Space Telescope, and provides indepth facts and details about the telescope and what it has found so far. StarGaze includes many advanced DVD features including digitally mastered audio and video, Dolby Digital Surround 5.1, DTS and Dolby Digital stereo music tracks, English, French, German and Spanish narration, subtitles and menus, a TV screen saver, and a Windows screen saver program.

System Requirements: DVD-Video player or DVD-ROM system with Pentium II or better CPU, Microsoft Windows '95, '98, NT2000, 25 MB free disk space on hard drive, MPEG-2 decoder with Dolby Digital surround sound, DVD-ROM drive. DVD-equipped MAC will play title only using the built-in DVD-Video player.

Starfinder Series

Purchase our 30-part series condensed onto 4 videotapes
7 1/2 hours with printed lesson guide **1/2" VHS** 099.93 V $65.00
Level: Grades 6–10

Complements existing physics and Earth science curricula, and relates Hubble Space Telescope discoveries and science concepts in a timely and interesting fashion. The Maryland Department of Education, in cooperation with the Space Telescope Science Institute at Baltimore's Johns Hopkins University, has produced this 30-part video series to provide students with new insights into the size, formation, and makeup of the universe. Includes a 90-page teacher's guide.

	Format	Item No.	Price

Starfinder Individual Titles by Tape

Tape 1
Program 1: Making Sense of Data
Program 2: Pictures From Numbers
Program 3: Why a Space Telescope?
Program 4: The Expanding Universe
Program 5: Laws of Motion
Program 6: How Big Is the Universe?
Program 7: Gravity in Space
Program 8: Orbital Motion

Tape 2
Program 9: Gravity and Weight
Program 10: Fusion Energy
Program 11: Evolution of a Star
Program 12: Tapping the Sun's Power
Program 13: Energy Transfer
Program 14: Rotational Energy
Program 15: The Nature of Light
Program 16: Earthbound Telescopes

Tape 3
Program 17: The Hubble Instruments
Program 18: Density of Matter
Program 19: Ancient Astronomers
Program 20: The Constellations
Program 21: Using the Celestial Sphere
Program 22: Magnetic Fields
Program 23: Electromagnetic Radiation
Program 24: Fingerprints of Light

Tape 4
Program 25: Solar System, Part I
Program 26: Solar System, Part II
Program 27: Conservation: Energy and Matter
Program 28: Pulsars and Quasars
Program 29: Diffraction
Program 30: Cosmology

Stars and Galaxies
8 slides with descriptions — **SLIDE** — 100.0-28 — $3.50

Shows a collection of star clusters, nebula, and galaxies. Many photos are from the U.S. Naval Observatory. Provided by NASA's Public Affairs Office.

Stardust—Bringing Cosmic History to Earth
8 minutes/1997 — **1/2" VHS** — 010.1-14V — $10.00

Provides an overview of the Stardust mission that launched a spacecraft to the comet Wild 2 on February 1999 to capture particles and return them to Earth. This three-dimensional animated video follows the Stardust mission from launch to the wondrous reentry to Earth. Copyrighted by the California Institute of Technology. Visit their Web site at: *http://stardust.jpl.nasa.gov/*

Supernova II
10 minutes/1988 — **1/2" VHS** — 010.1-09V — $10.00
Level: Adult

Describes the recent discovery of the supernova SN 1987A on February 23, 1987. NASA scientists explain how natural nucleosynthesis (formation of heavy elements) occurs when a supernova is formed and how studying the death of stars will help explain the origin of the universe.

	Format	Item No.	Price
Ten Years of Discovery: Hubble Space Telescope			
40 slides with descriptions	**SLIDE**	100.0-81	$11.50

The Hubble Space Telescope has been making science news for 10 years. The discoveries have been invaluable in current research, the images have become classroom décor, and it is recognized by everyone as part of the American success story. In honor of the anniversary celebration, this 40-slide set of Hubble images and engineering accomplishments identify the science and engineering of the Hubble. The slide descriptions give information about each slide and may be used at various content levels. The slide set and additional information can be found on their Web site at *http://hubble.stsci.edu/sci.d.tech/discoveries/10th/views/portfolio/slide01.shtml*

Universe

27 minutes/1976	**1/2" VHS**	010.1-04V	$16.00
Level: Grades 7–11	1/2" VHS	010.1-05V	$16.00
	(open captioned at the 2nd-grade reading level)		
	1/2" VHS	010.1-06V	$16.00
	(open captioned at the 3rd-grade reading level)		
	1/2" VHS	010.1-07V	$16.00
	(open captioned at the 4th-grade reading level)		

Lets the viewer travel billions of years through time to watch the universe evolve from one primordial mass into the stars and galaxies that we see today. Shows how the tremendous forces of gravity work, creating swirling clouds of gases and cosmic matter that are eventually transformed into stars and galaxies. What mysterious forces are behind such oddities as pulsars, quasars, and black holes? What causes the solar wind? What is a supernova? The answers to these and other questions are covered in this program. Narrated by William Shatner.

	Format	Item No.	Price
Exploring Meteorite Mysteries 48 slides with descriptions Level: Grades 5–12	**SLIDE**	100.0-66	$12.00

Highlights many of the meteorites that have been collected and studied by scientists. Also discusses impact craters and the classification and formation of meteorites.

Hubble Library of Electronic PictureBooks, The	**CD-ROM** Mac/Windows 3.1/Windows '95	400.0-70	$39.95

Welcomes you to the next millennium with an escorted tour of our solar system, a trip to the mountains of Venus, a walk on the Moon with Neil Armstrong, and a long, deep view into the wilderness of space. Expand your knowledge of the universe and prepare for the discoveries to come, with spectacular pictures from the Hubble Space Telescope, interplanetary spacecraft, astronaut-held cameras, and more. With nearly 500 color images, descriptive captions, and more than 25 minutes of exciting digital video from space, this collection provides an opportunity for you to explore the mysteries and marvels of our cosmic neighborhood, as well as the deepest reaches of space. Includes 16 programs and a free screen saver. The CD contains these Electronic PictureBooks: Gems of Hubble; The Impact Catastrophe that Ended the Mesozoic Era; Comparing Earth and Its Planetary Neighbors; The Red Planet: A Survey of Mars; Volcanic Features of Hawaii and Other Worlds; *Endeavour* Views the Earth; Scientific Results from the GHRS; Clementine Explores the Moon; Windows on Orion; The Planetary System; Magellan Highlights of Venus; Apollo 11 at Twenty-Five; Planetquest; Space Art by Kids; Other Worlds From Earth; and Images of Mars.

Hubble Telescope	**CD-ROM** Mac/Windows 3.1/Windows '95	400.0-86	$20.00

Features more than 200 digital Hubble images released by the Space Telescope Science Institute and includes a screen saver and image browser software for the viewer to easily review the photos, read and search the captions, and print for handy reference. PC: Windows 3.x or Windows '95/NT with at least 8 MB of RAM. Macintosh: System 7.1 or later with 3 MB free of RAM.

Hubble: The First Decade 8 minutes/2000 Level: Grades 5–12	**1/2" VHS** CLOSED CAPTIONED	002.4-08V	$10.00

A video overview of Hubble's most significant contributions to astronomy and the world. Starting with the deployment of the Hubble to the repair missions and on to how the Hubble Space Telescope has become a "Black Hole Hunter", finding super massive black holes throughout the galaxies. For copyright information, e-mail the Space Telescope Science Institute at *copyright@stsci.edu*. You can preview the video online at *http://hubble.stsci.edu/sci.d.tech/discoveries/10th/views/video.shtml*

Images of Earth and Space: The Role of Visualization in NASA Science 18 minutes/1996 Level: Grades 7–12	**1/2" VHS**	010.0-01V	$15.00

Demonstrates how observations and supercomputer models are used as tools in studying the Earth and space sciences. Explains how researchers turn billions of bytes of data into colorful scientific visualizations. These pictorial representations are helping NASA and the scientists the Agency supports gain unprecedented insights into natural and physical phenomena.

	Format	Item No.	Price
Images of Earth and Space II			
34 minutes/1998	**1/2" VHS**	010.0-02V	$16.00
Level: Grades 9–Undergraduate			

Uses computer simulations to "tour" the solar system and outer space. At the Sun, simulations investigate processes that create magnetic fields and release energetic particles. Earth science begins with the Pacific Ocean, studying the 1997–98 El Niño and Cyclone Susan. Crossing the globe, visualizations trace North America's East Coast and ocean currents in the North Atlantic Ocean. The night light from the world's cities then shows human impact. Next, two models probe nearby space phenomena, fluid behavior in microgravity conditions, and an asteroid collision. A jaunt to Mars explores the mountains and trenches of its dry, rocky exterior. The video concludes at a binary neutron star system, where two city-sized objects with the Sun's mass merge in a titanic explosion.

NASA CONNECT Video Series/1997–98

2 hours/1997

Level: Grades K–4	**1/2" VHS**	099.18 V	$24.00
Level: Grades 5–8	**1/2" VHS**	099.19 V	$24.00

Consists of four 30-minute interactive programs delivered to K–4 and 5–8 audiences. The four programs are preceded by an introduction designed to orient teachers to the CONNECT Series. Each program in the series will feature one of the four NASA Strategic Enterprises: Aeronautics and Space Transportation Technology, Earth Science, Human Exploration and Development of Space, and Space Science. It is this "content" that drives the uniqueness of the CONNECT programs. Includes an educator's guide.

NASA CONNECT 1997–1998 Individual Program Descriptions

Introduction: Teacher's Guide to the Series
This teacher's introduction explains the program's components and suggests ways for teachers to "connect" to NASA to experience exciting research firsthand.

Program 1: Flight Direction
Demonstrates that NASA engineers and pilots constantly experiment with test designs and materials to make the best airplanes. Their experiments are done over long periods of time. They change their experiments by varying the conditions. In this program, students will be introduced to and learn from former NASA test pilot Lee Person. They will observe students conducting a paper airplane experiment under different flight conditions. By working in pairs or small groups, viewers will better understand how research teams of NASA engineers, technicians, and pilots must work together to complete large projects involving airplanes.

Program 2: Planetary Landers
Helps students explore the design considerations that go into constructing a planetary lander and examine the mathematics behind the landing process. They will observe students conducting an experiment to investigate mass and velocity, in which different objects are dropped onto a "Martian" surface. By working in pairs or small groups, viewers will better understand how research teams of NASA scientists, technicians, and engineers must work together to complete large projects involving planetary landers.

Program 3: Earth from Space
Helps students explore how scientists have used satellites to study the impact of human activities on the global climate and examine the mathematics behind the collected data from space-based instruments to study Earth's environment. Students will observe student "researchers" conducting an experiment to investigate the differences in distances traveled by rubber-band rockets when the launch angle and the amount of force vary. By working in pairs or small groups, viewers will better understand how research teams must work together to conduct investigations.

Program 4: Doing More in Less
Helps students explore the concept of microgravity. Students will observe student "researchers" conducting an experiment to investigate the effects of varying the amount of fuel (fizzing antacid tablets) on the difference in time from fuel ignition to landing. By working in pairs or small groups, viewers will better understand how research teams must work together to conduct investigations.

NASA CONNECT Video Series/1998–1999
Program 3: Wherever You Go, There You Are
30 minutes/1999 **1/2" VHS** 099.20-03V $16.00
Level: Grades 4–8

Introduces students to the science of navigation and involves them in observing, measuring, and interpreting data to determine exact locations. NASA researchers will show students how math, science, and geography combine to make navigating safer and easier. Students will see how various professionals involved in the science of navigation require the use of math, science, and geography to get from one destination to another. They will learn how Global Positioning Satellites (GPSs) now make navigation much easier and safer for civil, commercial, and military pilots. Students will plot a course by using a compass, a compass rose, and a transit. They will be actively involved in organizing, comparing, and interpreting data. Includes an educator's guide.

NASA CONNECT Video Series/2000–2001
Program 3: Patterns, Functions, and Algebra: Wired for Space
30 minutes/2000 **1/2" VHS** 099.22-03V $10.00
Level: Grades 5–8 CLOSED CAPTIONED

The third of five programs in the 2000–2001 NASA CONNECT Series. Produced by the NASA Langley Research Center's Office of Education. In this program, students will learn how patterns, functions, and algebra can help NASA engineers design new ways of propelling spacecraft, and how electricity and magnetism are being used to replace the fuel-consuming rocket propulsion commonly used to deliver a push to spacecraft. Students will discover three projects that use electromagnetism in a dynamic way: the Magnetic Levitation Launch System (MagLev), the Propulsive Small Expendable Deployer System (ProSEDS), and the student-designed Icarus satellite. Students will observe NASA engineers using algebra to design and test the Icarus satellite. Through classroom and online activities, students will make connections between electricity and magnetism, and between NASA research and the mathematics, science, and technology they learn in their classroom. Broadcast date February 15, 2001.

NASA CONNECT Video Series/1999–2000
Program 5: Proportionality: The X-Plane Generation
30 minutes/2000 **1/2" VHS** 099.21-05V $10.00
Level: Grades 4–8 CLOSED CAPTIONED

Produced by NASA Langley Research Center's Office of Education, this is the fifth of seven programs in the 1999–2000 NASA CONNECT Series. CONNECT is designed to enhance the teaching of math, science, and technology in grades 4–8 using aeronautics and space technology as its organizing theme. Students will learn why scaling and proportion are important factors in spacecraft design. Additionally, students will learn to calculate ratios and portions; use the Internet and visit Norbert's lab; and make a model of NASA's X-33.

NASA'S Hubble Space Telescope: The Challenge and Complexity of Operations
18 minutes/1990 **1/2" VHS** 002.4-04V $15.00
Level: Grades 11–Adult

Details how NASA uses scientists, researchers, and engineers throughout the world to meet the challenge of monitoring and maintaining the Hubble Space Telescope. Touches on procedures for sending commands to the telescope, archiving and distributing data, and scheduling observation time. Also includes a segment on some of the complex steps that were taken to deploy the telescope.

	Format	Item No.	Price
Real Reasons for Seasons, The			
Level: Grades 6–8/2001	**Book w/CD-ROM** Windows '95/Mac	002.2-24P	$6.00

This guide was developed through a partnership between the U.C. Berkeley Lawrence Hall of Science's Great Explorations in Math and Science Program (GEMS) and NASA's Sun-Earth Connection Education Forum. NASA is making 500 copies of this guide available through CORE for shipping and handling costs. This GEMS guide is aimed at helping students arrive at a clear understanding of seasons as they investigate the connections between the Sun and Earth. Along the way, students take a "Trip to the Sun", determine the real shape of the Earth's orbit, evaluate actual data on world temperature and hours of sunlight in different locations, and model how the angle at which sunlight hits the Earth affects its concentration. Throughout these engaging activities, students gain important standards-based science and mathematics content, and develop abilities that are essential in scientific investigation. A CD-ROM, included in this guide, offers a rich collection of helpful resources from NASA and other sources, Web links, and software programs. One of the software programs included is "Seasons", created by Riverside Scientific in St. Paul, Minnesota, which is a very powerful modeling system that allows you to change the Earth's orbit and the tilt of the Earth's axis, and then predict how these changes will affect the seasons. Also available online at *http://www.lhs.berkeley.edu/GEMS/GEMSSeasons.html*

Those Magnificent Wind Machines			
30 minutes/1980 Level: Grades 7–10	**1/2" VHS**	005.2-01V	$16.00

Traces the evolution of the NASA wind program from the first wind turbine at Sandusky, Ohio, to Block Island, Rhode Island, where NASA and the local power company demonstrated that wind turbines could provide power to an electrical system. The program concludes with a look at the largest, most powerful wind turbine ever built, located in Washington State.

What's in the News—Space Series 12-Part Series			
Purchase our 12-part series condensed onto 3 videotapes 3 hours with printed lesson guide Level: Grades 4–Adult/1993	**1/2" VHS**	099.96V	$48.00

Offers 12 15-minute programs on space sciences and exploration that weave stunning NASA videos, demonstrations of scientific principles, and interviews with space scientists. Produced and copyrighted by WPSX-TV, Penn State's College of Education, and the Pennsylvania Space Grant Consortium. Not for international or commercial distribution. Includes a comprehensive teacher's guide.

What's in the News Individual Program Descriptions

Program 1: Introduction
Chronicles the history and milestones of flight and rocketry from the myth of Icarus to the building of the International Space Station.

Program 2: Eyes on the Sky—Astronomy
Focuses on people's fascination with the universe and their study of it, from stargazing with the unaided eye to scientific exploration using the Hubble Space Telescope.

Program 3: Gravity—A Force of Nature
Explains the concept of universal gravity, microgravity, and weightlessness using examples from Earth, such as a roller coaster, and from space, such as Skylab and Space Shuttle acrobatics.

Program 4: Space Shuttle—Blast Off to the Future
Looks at the Space Shuttle in detail—its design and compartments, how it is fueled, and how it stays in orbit around the Earth.

Program 5: Teamwork in Space
From astronaut to engineer to scientist, looks at the numerous people involved in the launching of a spaceship and the completion of a successful mission.

Program 6: Spaceship Earth
Explains and compares natural and artificial ecosystems using the ocean and extravehicular mobility unit (spacesuit) as its two main examples. Includes a piece-by-piece examination of a spacesuit with a spacesuit technician.

Program 7: Living in Space
Examines the physiological changes to the body in space, such as a shift in body fluids and the loss of calcium. Also looks at changes in everyday living, including washing, sleeping, eating, and going to the bathroom.

Program 8: Working in Space
Examines the effect of microgravity on astronauts' ability to work in space. Looks at important engineering designs from foothold inside the Space Shuttle to the mobile Manned Maneuvering Unit. Examines astronaut training on Earth, including tasks performed in a huge tank of water.

Program 9: Eyes in the Sky—Communications Satellites
Looks at the ability of satellites to help us communicate with each other faster and over longer distances. Traces the path of a satellite signal from a ground station on Earth to an orbiting communications satellite in space and back down to a receiving station on Earth.

Program 10: Eyes in the Sky—Landsurvey Satellites
Explains what a landsurvey satellite is and its ability to "see" changes in the Earth's geography over time, such as rainforest destruction and population growth. The main scientific concepts included are electromagnetic radiation and atmospheric absorption and reflection of radiation. The career focus segment features a geographer.

Program 11: Eyes in the Sky—Weather Satellites
Looks at the changes in weather forecasting caused by advancements in satellite technology from the early TIROS I satellite to the most modern. Includes a brief look at weather on other planets.

Program 12: Space Exploration—The Next Frontier
Summarizes the most important ideas and scientific concepts from the preceding 11 programs, and challenges students to dream about new possibilities in exploration.

	Format	Item No.	Price

Astronomy Village: Investigating the Solar System

	CD-ROM	400.1-33A	$60.00
Level: Grades 5–9/2001	Windows '95/Mac		

"Astronomy Village: Investigating the Solar System" is a multimedia approach to the study of the Earth and the solar system for middle school students. Students will actively explore important questions facing planetary astronomers today. Does life exist elsewhere in the solar system? What will the surface of Pluto be like when spacecraft arrive there? This CD-ROM product will run on Internet Explorer and Netscape Web browsers on both PC and Macintosh computers. For more information, visit their Web site at: *http://www.cet.edu/av2/vintro.html#introtop*

You can also purchase Astronomy Village: Investigating the Solar System in the following sets:

5-Pack Set includes:
Five Astronomy Village: Investigating the Solar System CD-ROMs, one teacher guide, and one teacher toolkit CD-ROM for $249.00—item #400.1-33B

10-Pack Set includes:
Ten Astronomy Village: Investigating the Solar System CD-ROMs, one teacher guide, and one teacher toolkit CD-ROM for $449.00—item #400.1-33C

System requirements: Windows '95 or Mac 7.5 (or higher) operating system, minimum of 16 MB RAM, 14-inch color monitor (capable of 800x600 resolution), Internet Explorer or Netscape Navigator versions 4.0 or higher, and a CD-ROM drive for each student or group of students using the software. Optional equipment: A printer is strongly recommended for printing student worksheets, hands-on activities, logbook pages, and library articles. A set of headphones with a splitter is useful for listening to the Village in a busy classroom.

BLACKOUT! Solar Storms and Their Effects on Planet Earth

19 minutes/1999	**1/2" VHS**	010.2-05V	$15.00
Level: Grades 5–Adult	CLOSED CAPTIONED		

"BLACKOUT" takes you on a journey from the Sun to the Earth as eruptions known as solar storms travel to Earth and affect our lives in ways we still don't completely understand. Three-dimensional animations bring to life the journey, through 150 million kilometers of space, of these outbursts of "space weather". The video, complete with 3-D graphics, was produced and written by a teacher for the purpose of illustrating concepts too difficult to visualize for the typical middle school student. The concepts of CMEs (Coronal Mass Ejections), flares, and the solar wind are explained, both visually and by use of analogies, to help students grasp the scope of these phenomena. The questions: "What does this mean to me?" or "Why should I be concerned?" are also addressed in the video. The effects solar storms have on the human inhabitants of Earth are explained in ways that "hit home" for the middle school student and emphasize, in an exciting visual way, the awesome power of the Sun. The BLACKOUT module package is available online at *http://www.mcps.k12.md.us/departments/eventscience/ebsordering.html*

Journey Through the Solar System 14-Part Series

Purchase our 14-part series condensed onto 4 videotapes 7 hours with printed lesson guide	**1/2" VHS**	099.02 V	$60.00

Journey Through the Solar System Individual Program Descriptions

Program 1: Our Star the Sun/1982
Examines pictures and observations from three Skylab missions of the 1970s. An analysis of the atmosphere, temperature, density, chemical composition, physics, and magnetic fields of the Sun is presented.

Program 2: Mercury, Exploration of a Planet/1976
Provides excerpts from the NASA film "Mercury, Exploration of a Planet", which uses animation and photography to depict the flight of the Mariner spacecraft to Venus and Mercury. Includes a NASA program, Our Solar System, suitable for primary grades.

Program 3: Venus Pioneer/1982
Documents the early Pioneer missions to Venus in the late 1970s through a series of animation, NASA photographs, and interviews with project scientists. Highlights some early discoveries about the planet's atmosphere and surface features.

Program 4: Earth, the Planet/1982
Examines Earth from the vantage point of space, describing its atmosphere and magnetic fields, and presenting a view of the world through the eyes of the Landsat observation satellite.

Program 5: Assignment . . . Shoot for the Moon/1982
Illustrates how the Moon was surveyed by machines prior to our first lunar landing.

Program 6: The Moon and Man/1982
Provides segments from a compilation of historic NASA films that document many of the manned expeditions to the Moon.

Program 7: The Fourth Planet/1982
Shows how information gleaned from space missions began to separate fact from fiction concerning Mars, which has been the setting for many tales of science fiction.

Program 8: Life on Mars?/1982
Describes the experiments conducted on the Martian surface in search for life.

Program 9: Jupiter Odyssey /1974
Summarizes the Pioneer 10 results and highlights pictures of the largest planet in the solar system.

Program 10: Jupiter—A Clearer Picture/1982
Reveals fascinating findings about the moons of Jupiter as a result of data collected by the Voyager spacecraft.

Program 11: Pioneer—Saturn Encounter/1982
Offers views of Jupiter and Saturn from the Pioneer spacecraft.

Program 12: Voyager 2/Saturn Encounter/1982
Highlights live television coverage from the Voyager 2 spacecraft's close encounter with Saturn. New discoveries about Saturn and its moons, as well as other historical information and new analysis, are presented. From the Jet Propulsion Laboratory, many representatives of the world's scientific press corps discuss new information about the solar system's second largest planet.

Program 13: Uranus, Neptune, Pluto, and Beyond/1982
Presents theories about the structure and nature of the three outer planets, comets, and asteroids. Spacecraft messages to "anybody out there" are reviewed.

Program 14: Teacher Silent Video Lesson Guide/1982
Consists of questions, definitions, and student activities that teachers can use to plan lessons around the "Journey Through the Solar System" series.

On Robot Wings: A Flight Through the Solar System
30 minutes/1992 **1/2" VHS** 010.2-03V $19.95

Shows that unmanned spacecraft have extended our knowledge of the solar system in ways that could only be dreamed of a few decades ago. Featuring amazing footage from NASA's Jet Propulsion Laboratory, you will fly "on robot wings" over planets and moons as if aboard a high-speed low-flying spacecraft and explore, closeup, the features of Earth, Venus, Mars, and Uranus' moon Miranda. As a special bonus, see the first-ever images of

Gaspra, a 12-mile-long asteroid encountered by Galileo. Copyrighted by Finley-Holiday Films Corporation. For noncommercial home, school, and library viewing only. All other rights reserved.

Our Amazing Solar System
90 minutes/2001 **DVD** 010.2-07D $21.00
Level: Grades 4–12

With supercomputer visualizations, you will soar over the volcano-scarred landscape of Venus and journey to the Grand Canyon of Mars. Experience the eerie majesty of the giant outer planets and their amazing moons, unique gems in this wondrous solar system we call home. From comets to solar flares, from the scorched surface of Mercury to the frozen outer worlds of Neptune and Triton, this is the complete video saga of our amazing solar system. Featuring the amazing picture and sound quality that only DVD can offer, this fully narrated video reveals new worlds beyond our imagination. This is the epic adventure, as never before presented—a captivating program featuring the latest and best visuals from the golden age of space exploration. Copyrighted by Finley-Holiday Films/Steve Skootsky.

System requirements: DVD-Video player or DVD-ROM system with Windows '95/'98 or later, Macintosh system 7.5, OS 8/9 or later.

Our Solar System
29 minutes/1992 **1/2" VHS** 010.2-01V $10.00
Level: Grades K–4 OPEN CAPTIONED

Teaches the names, orbital positions, and characteristics of each planet using the phrase "my very educated mother just served us nine pizza pies." The program is partially animated, set to music, and appropriate for early elementary grades. Each tape contains four five-minute versions of the program: English, Spanish, sign language, and open captioned. Copyrighted by the Arizona Board of Regents.

Our Solar System
CD-ROM 400.0-73 $25.00
Mac/Windows 3.1

Offers an interactive exploration of the universe. More than 200 high-resolution images have been used to create this sight-and-sound voyage through space. Plays on either Mac or PC computers, or TV-based CD players. Copyrighted by Finley-Holiday Film Corporation.

Solar System Braille Map
Printed Map 010.2-06P $12.00

This map has been supplied by Southeast Regional Clearinghouse at the College of Charleston through special NASA funding for use in classrooms. You can visit their Web site for additional information under the "Special Needs" section at *http://serch.cofc.edu/serch/*

Solar System Exploration Videotape Collection
75 minutes/1992 **1/2" VHS** 010.2-04V $24.00
Level: Grades 8–12

Presents a collection of highlights from the Voyager, Magellan, Galileo, and Ulysses missions. Includes a teacher's guide. The ten video features are: Voyager: A Retrospective; And Then There Was Voyager; Miranda: The Movie; Mars: The Movie; Magellan to Venus; Magellan Venus Radar Mapping Results; Galileo: The Jovian Lab; Galileo Earth Rotation Movie; Galileo Moon Rotation Movie; and Ulysses: A Solar Odyssey.

Space Exploration: The Solar System
60 slides with audio cassette **SLIDE** 100.0-09 $16.00
Level: Grades 5–12

Analyzes information discovered about the planets.

	Format	Item No.	Price
Story of Our Universe, The 40 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-21	$11.50

Explores the universe and all of its other worldly phenomena. Produced by Finley-Holiday Films Corporation.

25 Years of Progress 14-Part Series Purchase our 14-part series condensed onto 4 videotapes 7 hours with printed lesson guide / 1983	**1/2" VHS**	099.04 V	$60.00

25 Years of Progress Individual Program Descriptions

Program 1: The Birth of NASA
Highlights the beginning of NASA (1958) and its early programs, including the introduction of a quality control program.

Program 2: The Moon, a Goal
Covers the fledgling organization, NASA, reaching several milestones in 1960–61. These milestones included two highly successful unmanned orbital flights, the world's first weather and passive communications satellite, and two manned suborbital flights.

Program 3: Around the World and on the Way
Details John Glenn's first Earth orbit.

Program 4: Preparing for the Moon
Illustrates continued improvements to the liquid hydrogen / oxygen rocket. Examines lunar photographs taken by Ranger 7, the tests performed on three Saturn rockets, and the plans that were made for Surveyor's landing on the Moon's surface.

Program 5: Gemini—The Twins
Details the 1964–66 two-person Gemini space flights, which provided scientists and astronauts with valuable information and experience. The soft landing of Surveyor I on the Moon in 1966 paved the way for manned lunar landings.

Program 6: Around the Moon
Details the events of a 1967 preflight test of the Apollo spacecraft, during which a fire erupted in the command module, resulting in the death of three astronauts. Because of this tragedy, the Apollo spacecraft was redesigned. In 1968, the Apollo program gained momentum with two unmanned and two manned space flights. Apollo 8 astronauts circled the Moon 10 times.

Program 7: Moon Landing
Focuses on the first lunar landing in 1969. Describes the steps NASA took to pursue research in aeronautics and satellite technology in the early 1970s.

Program 8: More Moon Exploration
Provides highlights of 1972–73, when Mariner 9 mapped the entire surface of Mars, and Pioneer 10 returned the first closeup pictures of Jupiter.

Program 9: Transition Years
Depicts the Apollo-Soyuz mission, which marked the first joint U.S. / USSR space mission. Highlights the two Viking spacecraft that landed on Mars to conduct the first extensive search for life on that planet.

Program 10: Shuttle Preparation and Planets
Examines Voyager I and II as they were launched toward Jupiter and Saturn. Each spacecraft carried a copper record, which was intended to serve as a greeting to other life forms.

Program 11: Planetary Discoveries
Overviews NASA technology during 1979 and 1980. Some of the highlights include Voyager's flyby of Jupiter, Pioneer's flyby of Saturn, the building of the space telescope, preparations for the first Shuttle flight, the reentry of Skylab, the launch of SOLARMAX, and many NASA spinoffs.

Program 12: The Shuttle Era
Presents the first years of the Space Shuttle. With the premier flight of *Columbia* in April 1981, the era of the reusable space transportation system began. Seven months later, *Columbia* was spaceborne again. Three more Shuttle flights followed in 1982.

Program 13: Space Shuttle Matures
Covers NASA's 25th year (1983), when the space Agency maintained its momentum of achievement. Pioneer 10 became the first artificial object to leave the solar system. *Challenger*, the second Shuttle in a fleet to eventually number four, embarked on its first flight in April 1983.

Program 14: Teacher Silent Video Lesson Guide
Consists of questions, definitions, and student activities that teachers can use to plan lessons around the "25 Years of Progress" series.

Views of the Solar System

CD-ROM 400.0-78 $21.95
Mac/Windows 3.1/Windows '95

Offers an extraordinary collection of images, animations, facts, and historical perspectives about the planets, moons, Sun, and other parts of our solar system. Includes a section with NASA-developed activities and National Science Teachers Association journal articles for educators. For a preview of the CD-ROM, visit *http://www.nsta.org/pubs/special/pb128x.htm*. Copyrighted by the National Science Teachers Association.

Voyager, The Grand Tour

18 minutes/1990 **1/2" VHS** 010.2-02V $15.00
Level: Grades 4–12

Highlights the significant features discovered by Voyagers 1 and 2 as these spacecraft traveled past the outer planets of Jupiter, Saturn, Uranus, and Neptune. This is a computer-animated video copyrighted by and reproduced with permission from Martin Marietta. For educational use only.

	Format	Item No.	Price
Comet Impact '94 20 slides with descriptions	**SLIDE**	100.0-46	$8.50

Features Hubble Space Telescope views of several of the fragment impacts when Comet Shoemaker-Levy 9 collided with Jupiter in July 1994. Includes additional images from other observatories.

Galileo Mission to Jupiter 20 slides with descriptions	**SLIDE**	100.0-55	$8.00

Provides an overview of the Galileo mission prior to the probe's descent. Includes photographs taken during flybys of the Moon, Earth, Gaspra, Ida, and Dactyl. Produced by Finley-Holiday Film Corporation. All images in this set are in the public domain.

Galileo Mission at Jupiter: Volume 2 20 slides with descriptions	**SLIDE**	100.0-79	$8.00

During its first year of residence in the Jovian system, Galileo had two close encounters with Ganymede, one with Callisto, close passes above Jupiter itself, and a Europa flyby shortly thereafter. The images in the set, though not a complete record of Galileo's travels to date, provide an overview of some of Galileo's most intriguing views of Jupiter and its satellites. Produced by Finley-Holiday Film Corporation. No copyright protection is asserted for these images.

Galileo Mission at Jupiter: Volume 3 20 slides with descriptions	**SLIDE**	100.0-80	$8.00

This slide set features images acquired by Galileo's Solid State Imaging System during the third through sixth orbits around Jupiter. It includes the highest resolution prime-mission data of the icy satellite Callisto, pictures from two close flybys of Europa, images of volcanic eruptions on Io, photos of Jupiter's complex and turbulent atmosphere, and a rare image of Jupiter's slender ring system. Manufactured by Finley-Holiday Film Corporation. No copyright protection is asserted for these images.

	Format	Item No.	Price
Destination Mars 33 minutes/1997 Level: Grades 4–10	**1/2" VHS**	010.2.4-09V	$16.00

Depicts the first human mission to Mars in the year 2018. The story of the journey is told by the mission astronauts as they record entries in their journals. The program presents Mars geology and the search for life on the planet. It also illustrates the technologies being developed to transport humans to Mars and support life on the planet once humans have landed. Includes Destination Mars activity packet with six interdisciplinary lessons.

Mars: Past, Present, Future 83 minutes/2001 Level: Grades 4–12	**DVD**	010.2.4-12D	$21.00

Presents a spectacular and highly detailed view of the planet itself, featuring the very latest images of the Martian surface. Best of all, it explores past, present, and future missions to Mars, including photos and data from Mariner, Viking, Pathfinder, and Mars Global Surveyor missions; also includes new evidence of water on Mars. From bizarre theories of early astronomers to visions of future science missions, see how discovery and exploration have changed our view of the red planet. Digitally mastered for amazing picture and sound quality, this fully narrated DVD lets you rediscover the complete Mars story from man's earliest discovery and science fiction fascinations to the latest revealing images from Pathfinder, Mars Global Surveyor, and beyond. Copyrighted by Finley-Holiday Films.

System requirements: DVD-Video player or DVD-ROM system with Windows '95/'98 or later, Macintosh System 7.5, OS 8/9 or later.

Mars: The Red Planet 1999	**DVD**	010.2.4-11D	$21.00

Explore Mars using the interactive Mars Map section, with over 700 detailed maps with zoom in/out and panning. The Art Gallery includes a Dolby Digital rendition of Gustav Holst's "The Planets", performed by Ryan Shore. Artworks from renowned Mars artists complete the Gallery. This is one of the most advanced DVD titles ever released. Mars: The Red Planet is a hybrid DVD-Video, DVD-ROM, and WebDVD title which includes 80 minutes of 5.1 Channel Dolby Digital music performed by Ryan Shore; it also features an array of video, still images, interactive maps, and historical spacecraft graphics. Advanced DVD features include multi-angle video, multi-track audio, 3-D video and still images, informational subtitles, dual operational mode, WebDVD support, and a Windows '95, '98, NT screen saver.

System requirements: DVD-Video player or DVD-ROM system with Pentium II or better CPU; Microsoft Windows '95, '98, or NT; 25 MB free disk space on hard drive; MPEG-2 decoder with Dolby Digital surround sound; and a DVD-ROM drive. DVD-equipped MAC will play title only using the built-in DVD-Video player. WebDVD features require Internet Explorer 5.0 and a PC that has the "Designed for Windows '98" logo.

Mars—Past, Present, Future: The Complete Story of the Red Planet 60 minutes/1996	**1/2" VHS**	010.2.4-07V	$19.95

Presents persuasive evidence by NASA scientists of life on Mars. Displays a spectacular and detailed view of the planet itself and explores past, present, and future missions to the planet, including Mariner, Viking, Pathfinder, and Global Surveyor. Concludes with a history of Mars observations over the centuries and the foretelling of future space travel to Mars from noted astronomers, authors, and scientists. Produced and copyrighted by the Finley-Holiday Film Corporation.

	Format	Item No.	Price

Mars Pathfinder/Sojourner Return to the Red Planet
20 slides with descriptions — **SLIDE** — 100.0-69 — $8.00

Contains an assortment of slides highlighting prelaunch preparations, trajectory, and launch and landing activities for Mars Pathfinder and Sojourner. Produced by the Finley-Holiday Film Corporation. No copyright protection is asserted for these images. Photo credits to read "NASA/JPL", unless otherwise noted.

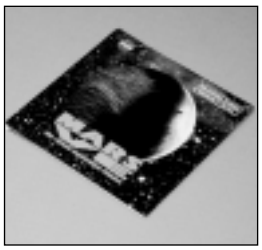
Mars Pathfinder/Sojourner Success, July 1997
20 slides with descriptions — **SLIDE** — 100.0-70 — $8.00

Provides the first images of the rocky, barren Martian world. Images include the two double hills called "Twin Peaks" and the rocks "Yogi" and "Barnacle Bill". Produced by the Finley-Holiday Film Corporation. No copyright protection is asserted for these images. Photo credits to read "NASA/JPL", unless otherwise noted.

Mars—The NASA Mission Reports
Level: Grades 9–Adult/1999 — **Book w/CD-ROM** Windows — 400.2-11 — $21.95

The red planet has been a beacon to every race of mankind since the dawn of history. Today Mars stands as a symbol of the high frontier—the next logical step in our exploration of the universe around us. In 1964, the United States of America launched Mariner 4 toward Mars in the hope that a handful of pictures returned by the spacecraft might answer some age-old questions. Was there an ancient Martian civilization? Would there be any signs of life? So began the first step in a close examination of our neighboring planet. Between Mariner 4 and Mars Global Surveyor in 1998, the United States has sent a fleet of robots to Mars with wildly varying degrees of success. Thanks to these versatile probes we now know almost as much about Mars on a global scale as we do about our own Earth. In Mars—The NASA Mission Reports, the triumphs and tribulations of the American Mars program is gathered together in one place. Press kits and mission reports from every Mars mission are collected together for the first time. Reading these documents—presented here in chronological order—gives a fascinating insight into how our understanding of the red planet has grown over the past four decades. These robot voyages are the advance guard, scouting out the path for the day when men will launch a manned mission to Mars. The CD-ROM includes the following complete NASA special publications: "The Difficult Road to Mars—Mars Exploration in the Soviet Union", "On Mars 1958–1978", "Mariner Mars 1964—Final Project Report", "Mariner 6 and 7 Pictures of Mars", "The New Mars —The Discoveries of Mariner 9", "Viking—Mission to Mars", "Viking Orbiter Views of Mars", "EMPIRE—Background and Initial Dual-Planet Mission Studies"; NASA movies in MPG video format: "Planet Mars", "19 Minutes to Earth", and "Mars—The Search Begins"; and animations and a 360° QuickTime panorama from Mars Pathfinder, as well as hundreds of pictures from every NASA Mars mission.

Mars VE: The Virtual Exploration Mission
CD-ROM — 400.0-88 — $5.00
Level: Grades 5–8 — Mac/Win 3.1/ Win '95



Serves as a curriculum supplement that allows students to understand basic concepts of space exploration and the search for life in the universe. Students are divided into teams and assigned a research category in which they will virtually explore four Mars landing sites. Includes a printable teacher's guide and student logbook, which provides additional content and interdisciplinary classroom activities. This interactive program emphasizes hands-on experience, critical thinking, problem solving, and collaboration within teams. Visit the Web site at *http://www.exploringspace.arc.nasa.gov/vecd.htm* or send e-mail to *marsve@mail.arc.nasa.gov*

NASA CONNECT Video Series/1999–2000
Program 4: Geometry of Exploration: Eyes Over Mars
30 minutes/2000 — **1/2" VHS** — 099.21-04V — $10.00
Level: Grades 4–8 — CLOSED CAPTIONED

Produced by NASA Langley Research Center's Office of Education, this is the fourth of seven programs in the 1999–2000 NASA CONNECT Series. CONNECT is designed to enhance the teaching of math, science, and technology in grades 4–8 using aeronautics and space technology as its organizing theme. Students will examine how the principles of geometry and linear and angular measurements are used to survey and map the Earth and planets such as Mars. Students will meet a surveyor who will explain how he surveys locations like football or soccer fields, will describe the tools and techniques he uses, and will show students how math and geometry are used in surveying. Students will also see how NASA researchers use geometric shapes to navigate spacecraft to Mars and how satellites, like the Mars Global Surveyor, and the principles of geometry are used to determine the elevation of land formations on Mars.

NASA CONNECT Video Series/1999–2000
Program 3: Geometry of Exploration: Water Below the Surface of Mars?
30 minutes/1999 **1/2" VHS** 099.21-03V $10.00
Level: Grades 4–8 CLOSED CAPTIONED

Produced by NASA Langley Research Center's Office of Education, this is the third of seven programs in the 1999–2000 NASA CONNECT Series. CONNECT is designed to enhance the teaching of math, science, and technology in grades 4–8 using aeronautics and space technology as its organizing theme. In this program, students learn how engineers and scientists use geometry in the solar system to navigate a spacecraft to Mars.

Pathfinder and the Best of Mars
CD-ROM 400.0-85 $20.00
Mac/Windows 3.1/Windows '95

Provides a stunning collection of Pathfinder images of Mars, along with the best Mars images from all the Mars missions, including Mariner, Viking, and Hubble views. As a special bonus, the CD includes 5 motion video clips and 20 3-D images to view with enclosed 3-D glasses. Image browser software allows the viewer to easily review photos, read the captions, and print them for handy reference. PC: Windows 3.x or Windows '95/NT with at least 8 MB of RAM. Macintosh: System 7.1 or later with 3 MB free of RAM.

Viking—Mars Landing
40 slides with audio cassette **SLIDE** 100.0-16 $11.50
Level: Grades 4–12

Shows that the Viking 1 and 2 missions radically changed the scientific community's view of Mars, as scientists studied photos revealing giant mountains, canyons, and plains. Produced by Finley-Holiday Film Corporation.

Windows on Mars
60 minutes/2000 **1/2" VHS** 010.2.4-10V $16.00
Level: Grades 4–8 CLOSED CAPTIONED

Use "Windows on Mars" to discover and research ways that scientists and artists view the potential of living on Mars. "Windows on Mars" brings 17 nationally and internationally recognized artists, as well as 11 scientists from the National Aeronautics and Space Administration and its Jet Propulsion Laboratory, to your classroom. Produced by the National Endowment for the Arts, provides teachers and students in both formal and informal learning environments with insights and thought-provoking questions and ideas for the study of planet Mars and space science. The video is divided into four parts, each ranging from just under 10 minutes to 18 minutes; based on experiences in art and architecture, music storytelling and folk arts, and dance; and then broken down into three segments: Weather Reports, Facts and Factoids, and Stories. Teachers can use one or all of the segments to support lesson plans and units. Segments can stimulate brainstorming about how a particular art discipline or form can be adapted to the planned Mars habitat. A teacher's guide to "Windows on Mars" is included. For more information, visit their Web site at *http://www.mars2030.net*

	Format	Item No.	Price
CRATERS! A Multi-Science Approach to Cratering and Impacts			
	Book w/CD-ROM	010.3-03P	$24.95
Level: Grades 9–12/1995	Mac/Windows		

Includes 20 ready-to-use, hands-on activities that use cratering to teach key concepts in physics, astronomy, biology, and Earth science. Includes a custom Mac/Windows CD-ROM packed with supplemental images for classroom activities. Copyrighted by the National Science Teachers Association.

Moon: The Geologic History and Future Exploration, The

36 slides with descriptions and teacher's guide	**SLIDE**	100.0-48	$15.00

Emphasizes the Moon's geology, geologic history, and origin. Shows how the astronauts explored the Moon and gives a brief history lesson on what we know about the Moon from telescopic observations. Addresses some of the exciting possibilities that await us when humans return to the Moon to stay. All slides are from NASA, except where specific copyright is noted.

Moonwalk Four-Part Series

Purchase our 4-part series condensed onto 1 videotape			
2 hours/1970	**1/2" VHS**	099.06 V	$32.00

Moonwalk Individual Program Descriptions

Program 1: The Day Before
Highlights the mood of the people during the long-awaited Apollo 11 mission. This unprecedented journey captured the heart of all the world.

Program 2: Adapting to a Space Environment
Examines the testing procedures Apollo operators used to simulate the space environment. Also details the functions of the different stages of the Moon rocket.

Program 3: One Small Step
Focuses on Neil Armstrong's historical first step on the Moon's surface.

Program 4: The Moon on Earth
Examines the research conducted on Moon rocks returned by the Apollo 11 mission. The studies revealed many aspects of the Moon's characteristics.

Reading the Moon's Secrets

16 minutes/1976	**1/2" VHS**	010.3-01V	$15.00
Level: Grades 7–12			

Addresses in 10 short segments an important aspect of lunar knowledge. Designed to be used as a teaching aid in science classrooms; questions are presented in each segment.

	Format	Item No.	Price
Remembering Apollo 11—The 30th Anniversary Data Archive CD-ROM			
	CD-ROM	400.0-96	$5.00
Level: Grades 9–Adult/1999	WIN '95/Power MAC		

This CD-ROM is intended as a collection of hard-to-find technical data and other interesting information about the Apollo 11 mission, as well as the Apollo program in general. It includes basic overviews, such as a retrospective analysis, an annotated bibliography, and history of the lunar orbit rendezvous concept. It also contains technical data, such as mission operations reports, press kits, and news references for all of the Apollo missions, the Apollo spacecraft, and the Saturn V launch vehicle. Rounding out this CD-ROM are extensive histories of the Lunar Orbiter program (the robotic predecessor to Apollo), biographies of the Apollo astronauts and other key individuals, and interesting audiovisual materials, such as video and audio clips, photo galleries, and blueprint-like diagrams of the Apollo spacecraft.

Salute to Apollo, A			
37 slides with audio cassette	**SLIDE**	100.0-31	$11.00
Level: Grades 7–12			

Chronicles the Apollo missions, highlighting Apollo 11, the first mission to land on the Moon.

	Format	Item No.	Price
Saturn Educator Guide EG-1999-12-008-JPL Level: Grades 5–8	**Book w/CD-ROM** Mac/Windows	010.2.6-02P	$15.00

The guide consists of three major sections: Lessons, Enrichments, and Appendices. Includes opportunities to use the contexts of Saturn and the Cassini-Huygens mission to enrich your curricular units in science. The lessons are grounded in the National Science Education Standards and constructivist learning theory, as well as enhanced by the excitement of real-life space science and engineering. The guide also offers highlights of the interconnections between Saturn and other areas of human endeavor, such as art, language, history, and mythology. This unique blend will enable a grander diversity of learners to share and benefit from the excitement of Cassini-Huygens mission discoveries. The "Ways of Seeing" CD-ROM is included. Additional copies of the CD-ROM can be purchased individually.

Voyager 2 Encounters Saturn 40 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-19	$11.50

Illustrates Voyager's most significant discoveries about Saturn, including incredible rings, erupting volcanoes, and cyclonic storms. Produced by Finley-Holiday Films Corporation.

Ways of Seeing: An Educational CD-ROM from the Cassini Program Level: Grades 5–8/1999	**CD-ROM** Power MAC/WIN '95	400.1-31	$5.00

Tells the story of the Cassini mission in pictures, sound, and video, as well as providing curriculum support material for middle school science teachers. Focuses on the topic of the electromagnetic spectrum and how we "see" in different regions of the spectrum. The curriculum material on the CD-ROM is aligned with State and national teaching standards so that it can be easily incorporated into a teacher's regular curriculum. The curriculum material itself consists of background text written by professional curriculum writers, along with images, animations, movies, classroom activities, and interactive computer simulation tools. Unlike most educational CD-ROMs, which are either encyclopedia-like resources or self-paced learning courses for students, this CD-ROM addresses the needs of a teacher with limited computing resources in the classroom. With this disk, teachers can put together their own lesson plans or lectures, utilizing images, text, and video material on the disk. Copyrighted by California Institute of Technology and its licensors.

PC: Windows Pentium 100 MHz or faster, Microsoft Windows '95 or higher, 12 MB memory, 640 x 480 screen resolution set to 16-bit color depth, 6X or faster CD-ROM player, QuickTime 3.0 for Win '95, '98, NT (included); a sound card, Adobe Acrobat Reader 3.0 or higher (included). Macintosh: PowerPC processor, 100MHz or faster, MacOS 7.1 or higher, 12 MB memory, 640 x 480 screen resolution set to thousands of colors, 6X or faster CD-ROM player, QuickTime 3.0 (included), Adobe Acrobat Reader 3.0 or higher (included).

	Format	Item No.	Price

ACE: Advanced Composition Explorer—Exploring Origins of the Solar System
15 minutes/1997 **1/2" VHS** 010.2.8-04V $10.00
Level: Grades 5–12

In an effort to understand the formation of the solar system and how it continues to operate, NASA launched the Advanced Composition Explorer (ACE) in 1997 to observe solar particles and intergalactic material. This prelaunch program includes a brief explanation of the science ACE is studying, including cosmic rays, solar wind, solar activity and aurorae, and the solar magnetosphere. It also discusses ACE's design and orbit. Produced and copyrighted by Johns Hopkins University Applied Physics Laboratory. All rights reserved.

Colors of the Sun
22 minutes/2000 **1/2" VHS** 010.2.8-05V $15.00
Level: Grades 5–8

Discusses the fact that the visible spectrum is only a part of what our Sun, a star, emits within the electromagnetic spectrum. Students will study how astronomers use special tools (spectroscopes) to learn more about objects that are far away, and they will observe how white light can be refracted to form a color spectrum that has a pattern. Additionally, students will see how other careers are connected to spectroscopy, while understanding how technological design can help scientists to better understand our Earth, our Sun, our solar system, and the universe around us. Colors of the Sun Curriculum Activities are available online at *http://solar-center.stanford.edu/webcast/wcpdf/sun&stars5-8.pdf*

Dynamic Sun, The
CD-ROM 400.0-94 $5.00
Level: Grades K–12/2001 Windows '95/Mac

"The Dynamic Sun" is a multimedia educational presentation on the Sun and its effects on the Earth. This CD-ROM contains three presentations (i.e., grades K–5, 6–8, 9–12) in Adobe Acrobat PDF format, with over 30 video clips and a teacher's guide for each presentation. The purpose is to educate, engage, and develop student interest in the Sun and in exploring science. Shows images and video clips of the Sun from SOHO (Solar and Heliospheric Observatory), presents factual information on the Sun and Sun-related topics, explains Sun features including Sun spots, shows how explosions on the Sun occur and affect the Earth (auroral lights, power outages, etc.), and details Sun study projects.

SOHO Portfolio of Images
Level: Grades K–12 **Litho Set** 300.1-05P $6.00

A set of 14 pages of the Sun and space weather, with images, explanatory text, and Web references on the back of each page. Most of the images, including eclipses, solar storms, and solar prominences, are from the Solar and Heliospheric Observatory (SOHO).

Sun-Earth Day Kit
Level: Grades K–12 **Print Packet** 002.2-22P $6.00

There are 7–10 educational products in the packet meant to support and provide additional knowledge for those participating in Sun-Earth Day. For additional information, visit their Web site at *http://sun-earth.gsfc.nasa.gov/SunEarthDay*. The packet will include an assortment of the following materials: teacher resource guides, litho sets, CD-ROMs, folders, posters, bookmarks, and books.

	Format	*Item No.*	*Price*
Ulysses: A Voyage to the Sun 10 minutes/1985 Level: Grades 9–Adult	**1/2" VHS**	010.2.8-01V	$15.00

Describes the mission, planned jointly by NASA and the European Space Agency, to explore the atmosphere around the Sun. Using information obtained from Skylab, the program discusses the Sun's corona and electromagnetic field, as well as solar wind and solar flares.

Ulysses: An Expedition Over the Sun's Poles 6 minutes/1995 Level: Grades 9–Adult	**1/2" VHS**	010.2.8-03V	$10.00

Describes the Ulysses spacecraft, which was launched in 1990 and made some fascinating discoveries as it flew over the Sun's poles. The main objective of this mission was to compare the particles and fields above the Sun's poles with those found near its equator. This program discusses new information learned about solar wind, cosmic rays, and the magnetic field. Includes an educator's guide.

	Format	Item No.	Price
Uranus: I Will See Such Things 29 minutes/1986 Level: Grades 9–Adult	**1/2" VHS**	010.2.7-03V	$16.00

Begins with the history of William Herschel's discovery of Uranus in 1781. Project scientists discuss recent discoveries made about Uranus using pictures taken during the Voyager 2 flyby in 1986. Includes a comprehensive discussion of the planet's atmosphere, moons, and rings.

Voyager Uranus Encounter—Parts I and II 60 minutes/1986 Level: Grades 11–Adult	**1/2" VHS**	010.2.7-04V	$21.00

Describes the Voyager flyby of Uranus and its moons, with two episodes condensed onto one tape.

	Format	Item No.	Price
Collection of Magellan Venus Radar-Mapping Results			
15 minutes/1992	**1/2" VHS**	010.2.3-02V	$15.00

Shows the computer-animated techniques that create simulated flights over the surface of Venus. Video sequences use radar-mapping data recorded by Magellan from September 1990, through February 1992.

Magellan—Mapping the Planet Venus			
10 minutes/1991	**1/2" VHS**	010.2.3-01V	$10.00
Level: Grades 7–Adult			

Uses simple terms to explain how the sophisticated radar instruments on Magellan actually map the planet Venus and how the information is sent back to Earth and processed. Also takes the viewer on a computer-simulated flight over the planet, highlighting important surface features. Since August 1990, the space probe Magellan has sent back more imaging data on the planet Venus than all U.S. planetary missions combined.

	Format	Item No.	Price
Arctic Observatory/Sea Ice in the Polar Regions	**CD-ROM**	400.0-90	$5.00

Level: Grades 9–Adult Mac/Windows 3.1/Windows '95

The Arctic Observatory interactively addresses Arctic phenomena and processes, allowing students to ask and answer questions about interrelationships among several physical aspects of the Arctic system. A printable teacher's guide is included on the CD. Sea Ice in the Polar Regions describes sea ice classification, observation, and climate impacts. Both resources can be downloaded from *http://www.usra.edu/esse/learnmod.html*

Astronomy Village: Investigating the Solar System

CD-ROM 400.1-33A $60.00

Level: Grades 5–9/2001 Windows '95/Mac

"Astronomy Village: Investigating the Solar System" is a multimedia approach to the study of the Earth and the solar system for middle school students. Students will actively explore important questions facing planetary astronomers today. Does life exist elsewhere in the solar system? What will the surface of Pluto be like when spacecraft arrive there? This CD-ROM product will run on Internet Explorer and Netscape Web browsers on both PC and Macintosh computers. For more information, visit their Web site at: *http://www.cet.edu/av2/vintro.html#introtop*

BioBLAST

Level: Grades 9–12/1999 **CD-ROM**

BioBLAST (Better Learning through Adventure, Simulation, and Telecommunications) is a multimedia curriculum supplement for high school biology classes. Based on NASA's Advanced Life Support research, the program offers students hands-on laboratory investigations, computer simulations, and Internet-based telecommunication resources to study the interdependent components of a bioregenerative life-support system (BLiSS) for a futuristic, Moon-based research outpost. Student tasks are presented as part of an adventure mission at a virtual lunar research station. The mission culminates with students testing their own BliSS designs using simulation software developed at NASA's Classroom of the Future. Components of the curriculum package include two CD-ROMs, a teacher guide, introductory videotape, Web site, and list serve.

SYSTEM REQUIREMENTS: Macintosh/Power PC, 640 x 480 monitor, 256 colors, 4X CD-ROM, 16 MB memory, 24 MB recommended, 17 MB free hard disk space, Internet Explorer or Netscape Navigator, version 3.0 or later, QuickTime 7.1.2 or later. Windows 486 or Pentium, VGA 640 x 480 monitor, 256 colors, 4X CD-ROM, 16 MB memory, 24 MB recommended, 8 MB free hard disk space, Internet Explorer or Netscape Navigator, version 3.0 or later, Windows '95 or later, QuickTime 2.1.2.59 or later, sound card and speakers.

BioBLAST	Single User	Windows	400.1-26W	$60.00
Includes: 1 BioBLAST CD, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	Single User	Macintosh	400.1-26M	$60.00
Includes: 1 BioBLAST CD, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	5-Pack	Windows	400.1-27W	$249.00
Includes: 5 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	5-Pack	Macintosh	400.1-27M	$249.00
Includes: 5 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	10-Pack	Windows	400.1-28W	$449.00
Includes: 10 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	10-Pack	Macintosh	400.1-28M	$449.00
Includes: 10 BioBLAST CDs, 1 Teacher Guide, 1 Experts in Science Advanced Life Support CD				
BioBLAST	Videotape	1/2" VHS	003.1-11V	$5.00
Ten-minute introduction to BioBLAST CD and related activities.				

Chandra X-Ray Observatory

CD-ROM 400.1-35 $5.00

Level: Grades 5–12 Windows/Macintosh

Includes Chandra images with short descriptions organized into categories (SNP, Black Holes, etc.) with background information. The Chandra X-Ray Sky Map lets you explore the X-Ray sky with an interactive map. Includes background information on constellations with links to the Chandra images and an introduction to the Chandra X-Ray Observatory, its mission, and hardware. Also, there is a glossary of terms, which is a reference section defining scientific words and phrases used throughout the CD-ROM. For additional information, visit the Chandra Web Site at *http://chandra.harvard.edu/edu/cd*

Deep Space: Featuring the Hubble Space Telescope Images

CD-ROM 400.0-83 $25.00

Mac/Windows 3.1/Windows '95

Provides an interactive menu that allows you to select from categories of deep space objects, such as galaxies and star clusters. Includes a complete collection of Hubble images from the Space Telescope Science Institute, 16 planet views, and a glossary. Produced and copyrighted by Finley-Holiday Film Corporation.

Dynamic Sun, The

CD-ROM 400.0-94 $5.00

Level: Grades K–12/2001 Windows '95/Mac

"The Dynamic Sun" is a multimedia educational presentation on the Sun and its effects on the Earth. This CD-ROM contains three presentations (i.e., grades K–5, 6–8, 9–12) in Adobe Acrobat PDF format, with over 30 video clips and a teacher's guide for each presentation. The purpose is to educate, engage, and develop student interest in the Sun and in exploring science. Shows images and video clips of the Sun from SOHO (Solar and Heliospheric Observatory), presents factual information on the Sun and Sun-related topics, explains Sun features including Sun spots, shows how explosions on the Sun occur and affect the Earth (auroral lights, power outages, etc.), and details Sun study projects. Version 4.0.

	Format	Item No.	Price
Earth Observatorium: Mission to Planet Earth			
	CD-ROM	400.0-77	$24.00
Level: Grades K–Adult	Mac/Windows 3.1/Windows '95		

This lets you look out a porthole of the Space Shuttle *Endeavour* during mission STS-68 to view 12,500 images of Earth, plus many of the radar images taken during the flight. A navigation interface lets you view images by timeline, country, geographic location, or photo ID. The astronauts discuss the flight's results in a 16-minute movie. Published and copyrighted by Rocky Mountain Digital Peeks. Volume 2: for Windows 3.1, Windows '95, or Macintosh OS (Sys 7+), this multimedia CD-ROM works best using a 16- or 24-bit color display with 5 MB for the application.

ExoQuest

	CD-ROM	400.1-36A	$60.00
Level: Grades 7–9/2001	Mac/Windows		

Are we alone in the universe? A multimedia, educational product developed by NASA Classroom of the Future™ uses this question as a framework for integrating current research in astrobiology into the grade 7–9 curriculum. The astrobiology context allows students to explore topics in astronomy, evolution, paleontology, biology, Earth science, physics, chemistry, geology, and remote sensing. With the cooperation of the researchers involved, ExoQuest takes students on virtual journeys to destinations based on past, present, and future NASA missions. Each investigation poses problems that focus on different areas of research. The ExoQuest curriculum includes 12 activity modules. For more information, visit their Web site at *http://www.cotf.edu/ExoQuest*

Exploring Aeronautics

	CD-ROM	400.0-91	$5.00
Level: Grades 5–8	Mac/Win 3.1/Win '95		

Offers an introduction to aeronautics, covers the fundamentals of flight, contains a historical timeline, examines different types of aircraft, and teaches students to use the tools of aeronautics used by researchers to test aircraft designs. For more information, visit the Web site at *http://exploringaerospace.arc.nasa.gov*

Exploring the Internet

	CD-ROM	400.0-81	$5.00
	Mac/Windows 3.1/Windows '95		

Explains what the Internet is, how to get connected, and how to explore the World Wide Web. You will get hands-on experience navigating the Internet and discover its many uses. A fantasy voyage through the universe makes this CD fun for young users and adults alike. Produced and copyrighted by BDM Interactive.

Gate to Gate

	CD-ROM	400.1-32	$5.00
Level: Grades 9–College/2001	Windows '95/Mac		

Fasten your seatbelt and get ready for a flight through the U.S. air traffic control system! Gate to Gate, a multimedia CD-ROM, takes you behind the scenes to meet the people who manage air traffic and highlights some of the tools they use every day. From preflight to landing, you will navigate through the phases of a San Francisco to New York flight—becoming familiar with the air traffic management facilities that monitor your flight. NASA Ames Research Center, in cooperation with the Federal Aviation Administration, is developing sophisticated software tools and procedures to assist con-

trollers in managing air traffic more efficiently throughout all phases of flight: preflight, takeoff, departure, en route, descent, approach, and landing. Some of these tools are showcased and demonstrated in Gate to Gate. Also included with this informational CD-ROM is the Career Guidance Packet. This downloadable print material introduces high school and community college students to many of the job opportunities available in air traffic management. The print material is designed to enhance the student's experience with the CD-ROM while engaging them in activities similar to the work of controllers.

System Requirements: MACINTOSH: Power PC Computer with minimum 16 MB of available RAM. Operating System 7.1 or greater, monitor minimum 256 colors or better, double speed CD-ROM drive, and Apple QuickTime 3.0 or greater. WINDOWS/PC: 486 or better (Pentium preferred), PC compatible with minimum 16 MB of available RAM, Windows '95/'98, monitor minimum 256 colors or better, double speed CD-ROM drive, Apple QuickTime 3.0 or greater.

Geomorphology from Space: A Global Overview of Regional Landforms

Level: Grades 9–Adult/1986 **CD-ROM** 400.0-87 $5.00

Mac 7.1/Windows 3.1/UNIX/1986

Offers a CD-ROM version of an out-of-print 1986 NASA publication. This resource is a study of landforms and landscapes, including the description, classification, origin, development, and history of planetary surfaces. The core of the material is a gallery of space imagery consisting of 237 plates, each treating some geographic region where a particular landform theme is exemplified. Commentary, photographs, locator maps, and sometimes a geologic map accompany each plate. A Web version of this CD-ROM is available at *http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html*

Glacier Power

CD-ROM 400.0-89 $5.00

Level: Grades 4–6/1997 Mac

Serves as a curriculum supplement that includes information on glaciers and their importance to climate studies. The CD includes lesson plans, student review exercises, activities, and resources such as glacier imagery, satellite imagery, illustrations, diagrams, and more. Available online at *http://www.asf.alaska.edu:2222/*

Hubble Library of Electronic PictureBooks, The

CD-ROM 400.0-70 $39.95

Mac/Windows 3.1/Windows '95

Welcomes you to the next millennium with an escorted tour of our solar system, a trip to the mountains of Venus, a walk on the Moon with Neil Armstrong, and a long, deep view into the wilderness of space. Expand your knowledge of the universe and prepare for the discoveries to come, with spectacular pictures from the Hubble Space Telescope, interplanetary spacecraft, astronaut-held cameras, and more. With nearly 500 color images, descriptive captions, and more than 25 minutes of exciting digital video from space, this collection provides an opportunity for you to explore the mysteries and marvels of our cosmic neighborhood, as well as the deepest reaches of space. Includes 16 programs and a free screen saver. The CD contains these Electronic PictureBooks: Gems of Hubble; The Impact Catastrophe that Ended the Mesozoic Era; Comparing Earth and Its Planetary Neighbors; The Red Planet: A Survey of Mars; Volcanic Features of Hawaii and Other Worlds; *Endeavour* Views the Earth; Scientific Results from the GHRS; Clementine Explores the Moon; Windows on Orion; The Planetary System; Magellan Highlights of Venus; Apollo 11 at Twenty-Five; Planetquest; Space Art by Kids; Other Worlds From Earth; and Images of Mars.

Hubble Telescope

CD-ROM 400.0-86 $20.00

Mac/Windows 3.1/Windows '95

Features more than 200 digital Hubble images released by the Space Telescope Science Institute and includes a screen saver and image browser software for the viewer to easily review the photos, read and search the captions, and print for handy reference. PC: Windows 3.x or Windows '95/NT with at least 8 MB of RAM. Macintosh: System 7.1 or later with 3 MB free of RAM.

	Format	Item No.	Price
Imagine the Universe/StarChild			
	CD-ROM	400.1-30	$5.00
Level: Grades K–8/2001	Windows/MAC		

This CD-ROM captures three NASA astronomy and space science Web sites as they existed in January 2001. Imagine the Universe contains information on the exotic and energetic objects in our universe, as well as introductions to how astronomers study the x-ray and gamma ray universe. StarChild provides general astronomy and space travel information at two reading levels (for K–8). Each of these sites contains its own learning adventure full of facts, fun, beautiful images, movies, and great education resources for teachers. The CD-ROM also includes Astronomy Picture of the Day for the year 2000—every day a different picture of the cosmos with a description written by a professional astronomer. For more information, send e-mail to *itu@heasarc.gsfc.nasa.gov* or visit the Imagine the Universe Web site at *http://imagine.gsfc.nasa.gov*

Making Sun-Earth Connections			
	CD-ROM	400.1-34	$5.00
Level: Grades 6–12/1999	Power Mac/Windows '95		

Making Sun-Earth Connections was designed to provide a basic understanding of the structure of the Sun and its effects on Earth. The ready-made presentations were developed on four levels for the education community to reach a K–12 audience. The presentation contains 21 video clips, graphics, and audio (grades 6–8 and 9–12).

Mars VE: The Virtual Exploration Mission			
	CD-ROM	400.0-88	$5.00
Level: Grades 5–8	Mac/Win 3.1/Win '95		

Serves as a curriculum supplement that allows students to understand basic concepts of space exploration and the search for life in the universe. Students are divided into teams and assigned a research category in which they will virtually explore four Mars landing sites. Includes a printable teacher's guide and student logbook, which provides additional content and interdisciplinary classroom activities. This interactive program emphasizes hands-on experience, critical thinking, problem solving, and collaboration within teams. Visit the Web site at *http://www.exploringspace.arc.nasa.gov/vecd.htm* or send e-mail to *marsve@mail.arc.nasa.gov*

Mission Geography			
	CD-ROM	400.1-37	$5.00
Level: Grades K–12/2001	Mac/Windows '95		

Mission Geography is learning modules designed to link the content, skills, and perspectives of geography with NASA's missions and results at three grade levels: K–4, 5–8, and 9–12. The key skills and techniques of geography and other sciences are used in each module to model the approaches used by scientists to explore Earth from both the ground and from space. Each module is divided into individual investigations and is supported by a Web site, *http://missiongeography.org*. Mac Power PC (OS 7.5.3 or later for Acrobat) with 6 MB of RAM for Acrobat or i486, or Pentium processor-based personal computer with CD-ROM drive (Windows 95 or later) with 16 MB of RAM for Acrobat, or modules may be downloaded by investigations in PDF format from *http://missiongeography.org*

Our Solar System			
	CD-ROM	400.0-73	$25.00
	Mac/Windows 3.1		

Offers an interactive exploration of the universe. More than 200 high-resolution images have been used to create this sight-and-sound voyage through space. Plays on either Mac or PC computers, or TV-based CD players. Copyrighted by Finley-Holiday Film Corporation.

Pathfinder and the Best of Mars

CD-ROM 400.0-85 $20.00
Mac/Windows 3.1/Windows '95

Provides a stunning collection of Pathfinder images of Mars, along with the best Mars images from all the Mars missions, including Mariner, Viking, and Hubble views. As a special bonus, the CD includes 5 motion video clips and 20 3-D images to view with enclosed 3-D glasses. Image browser software allows the viewer to easily review photos, read the captions, and print them for handy reference. PC: Windows 3.x or Windows '95/NT with at least 8 MB of RAM. Macintosh: System 7.1 or later with 3 MB free of RAM.

Remote-Sensing Tutorial

Level: College and Remote-Sensing Professionals/1999 **CD-ROM** 400.0-93 $5.00

Remote sensing involves the use of instruments or sensors to "capture" the spectral and spatial relationships of objects and materials observable at a distance, typically from above them. This tutorial will help the viewer understand how remote sensing is applied to studying the land, sea, and air making up the environments of our planet. It is intended to inform both professionals and the general public about the principles and achievements of remote sensing, with emphasis on applications already demonstrated, and to point to the anticipated functions and benefits of Earth science initiatives. The program uses Landsat, SPOT, and several radar systems to provide most of its examples of commonly used space imagery. The CD-ROM is current as of January 1999 and does not contain the latest version available on the Web site at *http://rst.gsfc.nasa.gov*

Shuttle-Mir: The United States and Russia Share History's Highest Stage

NASA SP-2001-4603 **CD-ROM** 400.1-38 $5.00
Level: Grades 5–Adult/2001 Windows/MAC

This CD-ROM was originally released in September 2001 as a companion to an illustrated history book with the same title, NASA SP-2001-4225. This standalone, searchable CD-ROM includes the full text and images in the book, as well as additional multimedia material. It further explores the Shuttle-Mir Program with more text, photos, videos, biographies, letters home from the Mir astronauts, and oral histories that explain the daily challenges faced by those working on Earth and in orbit. This CD-ROM is recommended for all those who are interested in space history. Students in junior high school and above should particularly enjoy this CD-ROM, as will their teachers and parents. Produced by the NASA History Office.

Space Shuttle Flights: 100 Stock Photos

CD-ROM 400.0-84 $15.00
Mac/Windows 3.1/Windows '95

Offers a collection of digital color photos selected from thousands of NASA images covering Shuttle missions from the first flight in 1981 to the second Hubble Space Telescope Servicing Mission in 1997. Includes photos of the Space Shuttle, astronauts in space, satellite launches, Earth from the Shuttle, and more. Compiled by Finley-Holiday Film Corporation. No copyright asserted for the images on this disc.

Spaceborne Imaging Radar—Seeing the Earth in a New Way

CD-ROM 400.0-75 $6.00
Level: Grades 5–12/1995 Mac/Windows 3.1/Unix

Contains radar images of sites around the world as seen before and during the SIR-C missions of 1994. The CD-ROM contains handheld photographs from the Space Shuttle, QuickTime movies from the missions, and photographs from the ground. Using captivating examples such as the mountain gorilla habitats of Rwanda, a radar-generated flyby of the Galapagos Islands, the discovery of the Lost City of Ubar in the Arabian desert, and many others, the CD-ROM puts our Earth at students' fingertips. Teachers may use the CD-ROM in many ways, from activities as simple as viewing pictures or as complicated as performing science experiments with real data taken from Earth orbit. Students can learn about NASA's Mission to Planet Earth and imaging radar through the structured lesson plans or think up their own experiments and analyze radar image data from the SIR-C missions. This CD-ROM includes the Netscape World Wide Web browser interface. If your computer has Internet access, there are links provided to a companion "Home Page" to this CD-ROM, as well as to other

NASA educational resources. The CD-ROM, produced by NASA's Jet Propulsion Laboratory, was designed for use by students at middle schools, high schools, and colleges. It was especially prepared for PC-compatible computers; however, it is ISO-9660 compliant, which means it is readable on Macintosh and Unix machines. Visit the Web site at *http://southport.jpl.nasa.gov/html/cdrom.html*

Views of the Solar System

CD-ROM 400.0-78 $21.95

Mac/Windows 3.1/Windows '95

Offers an extraordinary collection of images, animations, facts, and historical perspectives about the planets, moons, Sun, and other parts of our solar system. Includes a section with NASA-developed activities and National Science Teachers Association journal articles for educators. For a preview of the CD-ROM, visit *http://www.nsta.org/pubs/special/pb128x.htm*. Copyrighted by the National Science Teachers Association.

Visit to an Ocean Planet

CD-ROM 400.0-92 $5.00

Level: Grades 5–12/1998 Windows 3.1/Windows '95/Mac

Interactive, educational CD-ROM that reveals the importance of our oceans to global climate and life. Allows users to explore the Gulf of Mexico with satellite data, investigate the 1997–1998 El Niño, discover "what's up" with Earth-orbiting satellites, and learn about the research activities of real-life oceanographers. The curriculum background materials are arranged in the context of widely accepted teaching themes. The CD-ROM also highlights results from the TOPEX/Poseidon project. Copyright 1998, California Institute of Technology and its licensors. U.S. Government sponsorship acknowledged. All rights reserved. For more information, visit their Web site at *http://topex-www.jpl.nasa.gov/education/cdrom.html*

Ways of Seeing: An Educational CD-ROM from the Cassini Program

CD-ROM 400.1-31 $5.00

Level: Grades 5–8/1999 Power MAC/WIN '95

Tells the story of the Cassini mission in pictures, sound, and video, as well as providing curriculum support material for middle school science teachers. Focuses on the topic of the electromagnetic spectrum and how we "see" in different regions of the spectrum. The curriculum material on the CD-ROM is aligned with State and national teaching standards so that it can be easily incorporated into a teacher's regular curriculum. The curriculum material itself consists of background text written by professional curriculum writers, along with images, animations, movies, classroom activities, and interactive computer simulation tools. Unlike most educational CD-ROMs, which are either encyclopedia-like resources or self-paced learning courses for students, this CD-ROM addresses the needs of a teacher with limited computing resources in the classroom. With this disk, teachers can put together their own lesson plans or lectures, utilizing images, text, and video material on the disk. Copyrighted by California Institute of Technology and its licensors. PC: Windows Pentium 100 MHz or faster, Microsoft Windows '95 or higher, 12 MB memory, 640 x 480 screen resolution set to 16-bit color depth, 6X or faster CD-ROM player, QuickTime 3.0 for Win '95, '98, NT (included); a sound card, Adobe Acrobat Reader 3.0 or higher (included). Macintosh: PowerPC processor, 100MHz or faster, MacOS 7.1 or higher, 12 MB memory, 640 x 480 screen resolution set to thousands of colors, 6X or faster CD-ROM player, QuickTime 3.0 (included), Adobe Acrobat Reader 3.0 or higher (included).

TECHNICAL BOOKS/RESEARCH MATERIAL

NASA Mission Reports, Press Kits, Book and CD-ROM Sets

PLEASE NOTE: Material is very technical, excellent for research projects or those with extreme interest in subject, not for general interest level.

Apollo 7—The NASA Mission Reports

Book w/CD-ROM 400.2-12 $16.95

Level: Grades 9–Adult/1999 Windows

On October 1968, the United States manned space program was about to be reborn. An entirely new space vehicle awaited its pilots at Pad 34. After 21 months, the three-man Apollo space capsule had undergone a transformation. Over 1,300 modifications had been made to the spacecraft following the tragic fire which had claimed the lives of the Apollo 1 crew. Now the three men who had lost their friends on that ill-fated mission were faced with the task of flying an all-new space vehicle. It was to be the first manned flight of America's lunar spacecraft, and it was to be first manned launch of Wernher von Braun's giant Saturn IB rocket. The prestigious task of commanding the first Apollo mission was given to Captain Walter M. Schirra, a veteran of America's Gemini and Mercury programs. Accompanying him were Command Module Pilot, Major Donn Eisele, and physicist/civilian, Walter Cunningham—both were taking their first ride into space. Schirra, Eisele, and Cunningham would be the first men to ride on a Saturn rocket and were then expected to fly the new spacecraft for the full length of a lunar mission. Every single onboard system would have to be tested and studied. Apollo 7 would be the longest first flight of any spacecraft or aircraft in the history of aviation. Incredibly, within nine months of this first manned Apollo mission, two Americans would fly the hardware to the Sea Of Tranquility. This book includes the Apollo 7 Press Kit, the Prelaunch Mission Operation Report, the Post-Launch Mission Operation Report, and the Crew Technical Debriefing.

Apollo 8—The NASA Mission Reports

Book w/CD-ROM 400.2-01 $16.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM featuring the 22-minute NASA movie "Go For TLI". On December 21, 1968, the National Aeronautics and Space Administration sent three men to orbit the Moon. Commander Frank Borman, Command Module Pilot James Lovell, and Lunar Module Pilot William Anders were to be the first humans to enter deep space. It was the boldest step yet taken in the quest to fulfill President John Kennedy's goal of landing a man on the Moon by the end of the decade. To accomplish this task, the world's biggest and most complex rocket was built by a syndicate of America's leading aerospace manufacturers. Capable of taking over 100,000 pounds to the Moon, it was at that time the most complex machine ever devised by the hand of man. The Apollo-Saturn V was a goliath, and the flight of Apollo 8 proved it was an incredible vehicle. Apollo 8—The NASA Mission Reports finally puts in one place four of the most important documents from this triumphant odyssey—the Apollo 8 Press Kit, the Apollo 8 Premission Report and Objectives, the Apollo 8 Supplemental Technical Report, and the Apollo 8 postflight Summary. These four documents show the staggering proportions of the undertaking required to send men into lunar orbit. It is a testament to the ingenuity of the American people and the bold courage of three men.

Apollo 9—The NASA Mission Reports

Book w/CD-ROM 400.2-02 $14.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM featuring the movie "Three to Make Ready". On March 3, 1969, Commander James McDivitt, Command Module Pilot David Scott, and Lunar Module Pilot Russell Schweickart would be the first people to fly in a true spacecraft. Although the insect-like Lunar Module had flown once before, this was to be the first manned test. This would also be the first time that all of the Apollo hardware would be flown together, and it would put one more piece in place toward the goal of reaching the Moon before the end of the decade. Fighting off preflight illnesses and a delayed launch, the crew flew a perfect 10-day mission. Apollo 9 also provided the world's first dramatic look at astronauts spacewalking

around the Command, Service, and Lunar Module, and returned some of the most beautiful pictures ever taken of the LEM floating above the blue oceans of planet Earth. Apollo 9—The NASA Mission Reports finally puts in one place four of the most important documents from this auspicious flight—the Apollo 9 Press Kit, the Apollo 9 Preflight Mission Operation Report, the Apollo 9 Post-Launch Mission Operation Report, and the Apollo 9 Mission Operation Report Supplement. These four documents graphically illustrate the technology required to build a true space vehicle, a machine that can only perform its function in the harsh environment of space, and clearly illustrate the teamwork, dedication, and professionalism of the flight crew and NASA support team.

Apollo 10—The NASA Mission Reports

Book w/CD-ROM 400.2-04 $16.95

Level: Grades 9–Adult/1999 Windows

On May 18, 1969, NASA launched the last in a series of daring test flights of the Apollo hardware. Apollo 10 would follow swiftly on the heels of the successful flight of Apollo 9. The goal was to send a second crew into deep space, but this time with the fully equipped hardware that would be required for a lunar landing. Veteran astronauts, Commander Tom Stafford and Lunar Module Pilot Gene Cernan, were to fly tantalizingly close to the barren lunar surface, a mere eight nautical miles, while Command Module Pilot John Young would be required to conduct the first rendezvous in lunar orbit to ensure the safe return of his crew mates. Apollo 10—The NASA Mission Reports finally puts in one place four of the most important documents from this auspicious flight—the Apollo 10 Press Kit, the Apollo 10 Prelaunch Mission Operation Report, the Apollo 10 Post-Launch Mission Operation Report, and the Apollo 10 Post-Launch Mission Operation Report Supplement. For the interest of collectors, students, and historians, Apollo 10—The NASA Mission Reports follows the final test flight of Apollo through a series of astonishing technological accomplishments, including the accurate measurement of distortions in the Moon's gravitational field, which would finally pave the way for man's first landing on another world.

Apollo 11—The NASA Mission Reports Vol. 1

Book w/CD-ROM 400.2-05 $16.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM. Since the first glimmerings of intellect on planet Earth, the Moon's quicksilver light has beckoned. In July of 1969 the people of the world were witness to an event which was the undisputed scientific accomplishment of the 20th century. When astronauts Neil Armstrong and Edwin (Buzz) Aldrin planted their footsteps in the barren dusty powder of the lunar surface they not only fulfilled President John Kennedy's bold challenge, but also mankind's ancient dream. An accomplishment without parallel, the flight of Apollo 11 stands alone as humanity's greatest feat of imagination made manifest. Everything about project Apollo was an exercise in superlatives. The Saturn V was the largest and most powerful machine ever made by man, wielding an unimaginable seven million pounds of thrust, while the Apollo spacecraft was able to travel a half a million miles and function with a precision to match the finest Swiss watch. Standing on the shoulders of generations, Armstrong, Aldrin, and Collins heralded the arrival of a new era, an era in which the horizon of mankind's dreams would be forever shifted. In Apollo 11—The NASA Mission Reports Volume 1, some of the rare official documentation of this historic voyage is collected and made commercially available for the first time. This finally puts in one place some of the most important documents from this final test flight—the Apollo 11 Press Kit, the Apollo 11 Preflight Mission Operation Report, the Apollo 11 postflight Mission Operation Report, and the Apollo 11 postflight Press Conference. Also included in this historic package is a CD-ROM which features almost 1,400 pictures taken during the flight, an hour of video, and three unique and exclusive high-resolution QuickTime panoramas of Tranquillity Base as never seen before. And as a special bonus, a foreword by Dr. Buzz Aldrin.

Apollo 11—The NASA Mission Reports Vol. 2

Book w/CD-ROM 400.2-06 $13.95

Level: Grades 9–Adult/1999 Windows

Since the historic flight of Apollo 11, space historians and enthusiasts around the world have wondered what it was like to be aboard Eagle and Columbia. Apollo 11—The NASA Mission Reports Volume 2 features recently declassified reports which have finally been released to the public. After the initial flurry of press activity in 1969, the crew of Apollo 11 returned to their lives, and interviews became less and less frequent.

Journalists the world over followed Armstrong, Aldrin, and Collins and tried to squeeze every last piece of information from them about their adventure, but, as is often the case, some stories had to be withheld. Now Apogee Books is proud to announce the first ever publication which will take you inside Apollo 11 as it journeyed to the Moon, as told by the men who made the trip. This is the real story, nothing held back, taken from transcripts on July 31, 1969. It is often technical and sometimes surprising and amusing—but it is always educational and inspiring. This is the story of three men who traveled into the unknown, relying on each other and the hard work of the people back on Earth. Three men who pushed the envelope to a new limit. Taken from the crew's own words, Apollo 11—The NASA Mission Reports Volume 2 will be informing people for generations. Also included in this historic package is a CD-ROM which features almost 2 1/2 hours of video of the complete unedited Moonwalk and a unique and exclusive high-resolution QuickTime panorama of Tranquillity Base as never seen before. And as a special bonus, an hour-long video interview with Dr. Buzz Aldrin.

Apollo 12—The NASA Mission Reports **Book w/CD-ROM** 400.2-07 $16.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM featuring an exclusive 30th anniversary interview with Command Module Pilot Captain Richard "Dick" Gordon, the movie "Pinpoint For Science", the full EVA television record, the in-flight press conference, over 2,100 still photographs, and five QuickTime panoramas of the Ocean of Storms. When the crew of Apollo 11 returned to Earth in July 1969, they brought with them a wealth of new information about the Moon. Now astronauts Charles (Pete) Conrad, Alan Bean, and Richard Gordon would return to the Moon and build on that knowledge. The real test for the crew of Apollo 12 was not to see if they could get to the Moon, but to see if they could get to an exact place on the Moon. Their target was in an area known as the Ocean of Storms. On November 14, 1969, the crew of Apollo 12 blasted off to their place in history. Not only would Conrad and Bean become the third and fourth men to walk on the Moon, but they would land the Lunar Module Intrepid within 600 feet of their designated target. Waiting for them was the unmanned space probe Surveyor 3 which had soft-landed in April 1967. The flight of Apollo 12, which began almost catastrophically when the huge Saturn V was struck by lightning just moments after liftoff, went on to yield an enormous amount of valuable data collected during over 7 1/2 hours on the lunar surface. On their return home, the crew of Apollo 12 became the first humans to witness an eclipse of the Sun by the Earth. In Apollo 12—The NASA Mission Reports, some of the rare official documentation of the voyage of Apollo 12 is collected and made commercially available for the first time.

Apollo 13—The NASA Mission Reports **Book w/CD-ROM** 400.2-09 $16.95

Level: Grades 9–Adult/1999 Windows

Homer himself could not have written a more captivating story than the flight of Apollo 13. On April 11 1970, veteran astronaut Jim Lovell and his crewmates Jack Swigert and Fred Haise rode atop the eighth launch of the Saturn V juggernaut to begin their ill-fated journey to the Moon. The aptly named Command Module Odyssey and the reluctant Lunar Module—Lifeboat Aquarius were to take the three men to a date with the lunar highland area known as Fra Mauro, but fate and a faulty circuit in one of the vehicle's oxygen tanks would irrevocably alter their plans and turn the flight of Apollo 13 into an epic to rival the original Odyssey. After an explosion in the Service Module crippled the spacecraft while it was still outward bound, the crew would spend several harrowing days in near frigid temperatures while the technicians at home worked around the clock to devise new and ingenious ways to keep them alive and bring them home safely. In 1970, some considered Apollo 13 a catastrophic failure, but it has since been recognized as one of NASA's truly great moments, when the spirit of daring and ingenuity came to life in the team at Mission Control as they successfully brought the crew home. In Apollo 13—The NASA Mission Reports, some of the rare official documentation of the voyage of Apollo 13 is collected and made commercially available for the first time. The CD-ROM includes the NASA video documentary "Houston We've Got A Problem"; the pre-explosion in-flight television broadcast from Apollo 13; an exclusive video interview with Commander James Lovell; video of the launch of Apollo 13; the postflight Apollo 13 Press Conference video; nearly 600 Hasselblad photographs taken by the Apollo 13 crew; an extensive NASA acronym database; and the 198-page technical document "Separation Procedures/Alternate and Abort Missions for Apollo 13".

	Format	Item No.	Price

Apollo 14—The NASA Mission Reports

Book w/CD-ROM 400.2-14 $16.95

Level: Grades 9–Adult/2001 Windows

After the unfortunate accident which befell Apollo 13, the job of getting NASA back to the Moon fell on the shoulders of America's oldest astronaut, Alan B. Shepard. Shepard had been grounded since the flight of Freedom 7 in 1961 due to an inner ear disorder. After undergoing treatment, the "Icy Commander" was bumped to the top of the flight roster and appointed to command the flight of Apollo 14 to the Fra Mauro highlands of the Moon. Spending nearly 10 hours on the Moon in February 1971, Shepard and Lunar Module pilot Edgar Mitchell conducted a wide range of scientific experiments including Shepard's unplanned test of a golf ball in lunar gravity. Once more the world sat and watched in awe as the United States successfully put two more men on the Moon's surface while Stuart Roosa orbited above in the Command Module Kitty Hawk. Shepard and Mitchell hiked almost to the top of a 400-foot crater before running out of time and returning to the Lunar Module Antares. Apollo 14 returned to the Earth with a treasure trove of lunar data and over 100 pounds of Moon rocks. In Apollo 14—The NASA Mission Reports, some of the rare official documentation of the voyage of Apollo 14 is collected and made commercially available for the first time.

Freedom 7—The NASA Mission Reports

Book w/CD-ROM 400.2-16 $16.95

Level: Grades 9–Adult/2001 Windows

The rare documents and drawings of the Mercury-Redstone 3 mission—the flight of Freedom 7 are all gathered together in this one place. Presented herein are transcripts and documents from the NASA archives, from a time before the assimilation and reporting of mission data was a developed process. Includes: CD-ROM featuring: NASA video documentary Freedom 7, video from the Freedom 7 Earth-sky camera, video of the Freedom 7 instrument panel, videos of postflight press activities, and more.

Friendship 7—The NASA Mission Reports

Book w/CD-ROM 400.2-03 $14.95

Level: Grades 9–Adult/1999 Windows

Comes with a bonus Windows CD-ROM featuring a 57-minute NASA movie. On February 20, 1962, after weeks of delays, the fledgling National Aeronautics and Space Administration sent a man into orbit around the Earth. From that day to the present, the name of John Glenn became synonymous with the hazardous new occupation of an astronaut. The likeable Ohio family man, with his cool determination, professional nature, and calm resolve, would define a standard by which all of his successors would be measured. Friendship 7—The NASA Mission Reports takes a look at the first flight of John Glenn through the eyes of the people who made his trip possible. It also includes Glenn's own firsthand recollections of his journey as he reported them on his return. In the days before press kits, NASA issued news releases to the media. Reproduced here in its entirety is the rare official news release for January 21, 1962. Also included is a transcript of the entire ground-to-spacecraft communications, as well as dozens of diagrams and photographs of the Mercury-Atlas space vehicle. This material is taken directly from the NASA archives. It gives an unprecedented insight into the man, the team that supported him, and the true nature of what it meant to have the "Right Stuff".

Gemini 6—The NASA Mission Reports

Book w/CD-ROM 400.2-08 $16.95

Level: Grades 9–Adult/1999 Windows

Includes a Windows CD-ROM featuring over 50 minutes of 16mm film footage of Gemini 6; over 180 still pictures from Gemini 6; two movies about the Gemini program; nearly one hour of MPEG video; and an exclusive interview with Gemini 6 Commander Wally Schirra. Lost in the glare of Apollo's success, the Gemini program is often forgotten. Without the 10 successful manned Gemini missions, NASA could not have accomplished Kennedy's seemingly impossible goal of landing a man on the Moon in the 1960s. Gemini 6 was the fifth manned flight of America's two-manned spacecraft. Aboard were Commander Wally

Schirra and rookie pilot Tom Stafford. Their original mission flight plan was to attempt the first ever docking and rendezvous in space, an essential step if the pilots flying Apollo would ever be able to meet up in orbit around the Moon. The Soviet Union had claimed the first space rendezvous, but many felt that unless the pilot was in control and able to maneuver around the accompanying vehicle it could not truly be called a rendezvous. On October 25, 1965, the target vehicle, known as Atlas/Agena, failed to make orbit, and so the crew of Gemini 6 were suddenly presented with a totally revised and audacious flight plan. The long-duration Gemini 7 mission was already scheduled for launch, and so the crew of Gemini 6 were told that NASA would attempt a double-manned mission and rendezvous. This was undoubtedly a risky proposition which would stretch the NASA infrastructure to its limits. On December 15, 1965, ace pilot Schirra and rendezvous maestro Stafford closed to within a meter of Gemini 7, and America was one step closer to the Moon.

The High Frontier

Book w/CD-ROM 400.2-10 $19.95

Level: Grades 9–Adult/1999 Windows

Features a preface by Roger O'Neill, an introduction by Freeman Dyson, and essays by top experts in the field of space research, including Roger O'Neill, David Gump, Peter Glasser, Margo Deckard, George Friedman, Rick Tumlinson, and John Lewis. Man's ongoing conquest of the solar system has been much publicized for its miraculous accomplishments. What is generally less publicized are the potential uses of space beyond simply landing men on another planet. "Flags and foot prints" is something we can all be proud of, but the true value of near-Earth space lies with the possibilities for manufacturing and colonization. Processes not possible on Earth, because of atmosphere and gravity, can be employed in space to produce unique and highly desirable commodities. Habitats built in space, occupying the same orbit as the Moon and made primarily from lunar raw materials, can be the necessary answer to our desperate, ever-increasing needs for living and agricultural areas. Gerard K. O'Neill is universally recognized as the father of the "O'Neill colony" concept. Beginning in the 1970s, he took the original concepts and built from them a complete, realistic, and attainable plan—a plan to orbit permanent colonies at the L4 and L5 Lagrange points in near-Earth space, where everyday people would live, work, and play in comfort and safety in an environmentally satisfying world. In this third edition of The High Frontier is O'Neill's original blueprint for the future, accompanied by new chapters presenting the up-to-date technologies and social considerations that impact upon and further justify the plan. This is a vision of a possible hopeful future that could already have come to pass if the human race had committed to it—it is still a source of hope for the future. Space and all its advantages need not be limited to only those with "the right stuff", it should and can be for all of us. Includes: CD-ROM featuring: Presentations by Gerard O'Neill and the Space Studies Institute, and more than an hour of MPEG video.

Mars—The NASA Mission Reports

Book w/CD-ROM 400.2-11 $21.95

Level: Grades 9–Adult/1999 Windows

The red planet has been a beacon to every race of mankind since the dawn of history. Today Mars stands as a symbol of the high frontier—the next logical step in our exploration of the universe around us. In 1964, the United States of America launched Mariner 4 toward Mars in the hope that a handful of pictures returned by the spacecraft might answer some age-old questions. Was there an ancient Martian civilization? Would there be any signs of life? So began the first step in a close examination of our neighboring planet. Between Mariner 4 and Mars Global Surveyor in 1998, the United States has sent a fleet of robots to Mars with wildly varying degrees of success. Thanks to these versatile probes we now know almost as much about Mars on a global scale as we do about our own Earth. In Mars—The NASA Mission Reports, the triumphs and tribulations of the American Mars program is gathered together in one place. Press kits and mission reports from every Mars mission are collected together for the first time. Reading these documents—presented here in chronological order—gives a fascinating insight into how our understanding of the red planet has grown over the past four decades. These robot voyages are the advance guard, scouting out the path for the day when men will launch a manned mission to Mars. The CD-ROM includes the following complete NASA special publications: "The Difficult Road to Mars—Mars Exploration in the Soviet Union", "On Mars 1958–1978", "Mariner Mars 1964—Final Project Report", "Mariner 6 and 7 Pictures of Mars", "The New Mars—The Discoveries of Mariner 9", "Viking—Mission to Mars", "Viking Orbiter Views of Mars",

"EMPIRE—Background and Initial Dual-Planet Mission Studies"; NASA movies in MPG video format: "Planet Mars", "19 Minutes to Earth", and "Mars—The Search Begins"; and animations and a 360° QuickTime panorama from Mars Pathfinder, as well as hundreds of pictures from every NASA Mars mission.

Space Shuttle STS 1-5—The NASA Mission Reports

Book w/CD-ROM 400.2-15 $21.95

Level: Grades 9–Adult / 2001 Windows

The Space Shuttle is one of the great triumphs of modern technology. Capable of carrying 65,000 lbs. of cargo, weighing in at 90 tons, and measuring 122 feet long, Rockwell's Orbiter stands alone as the world's only aircraft capable of flying into space and returning at speeds exceeding 18,000 miles per hour. On April 12, 1981, two astronauts climbed aboard the fully fueled and integrated Space Transportation System. Twenty years before on the same day, a Russian missile had propelled 10,395 lbs. into space using 1.1 million pounds of thrust. Gagarin flew 25,000 miles in 108 minutes. On this day, 180,000 pounds would ride atop 7.7 million pounds of thrust. However, this crew would be landing on a runway after traveling over a million miles in a little over 54 hours. This book covers the Space Shuttle through the test flight stage and on to its first operational flight. With comprising rare NASA documents never before released to the public, the reader is taken inside this remarkable machine in the words of some of the men who flew it.

X-15—The NASA Mission Reports

Book w/CD-ROM 400.2-13 $21.95

Level: Grades 9–Adult / 1999 Windows

The history of aviation in the 20th century is filled with remarkable accomplishments. None more remarkable than the world's first winged spacecraft. From 1957 to 1975, the United States and the Soviet Union played a high-stakes game as they put crew after crew atop barely perfected missiles and hurled them further and further a field. In 1952, long before Sputnik, the NACA, along with the United States Air Force and Navy, was determined to build an aircraft that would be capable of reaching into outer space. While the rest of the world continued to fly around in propeller-driven aircraft, North American Aviation of California constructed a one-seater bullet powered by a rocket engine with unparalleled thrust. When the craft was unveiled in 1958, the hypersonic vehicle was as bold as anything ever attempted in the history of flight. From 1959 to 1968, the three X-15s would carry 12 daring test pilots to the fringes of space and bring them back nearly 200 times. With the notable exception of the Space Shuttle, the X-15 is the only manned, winged vehicle to go into space repeatedly and return to its point of origin. It is rarely noted that a mere four months after John Glenn became the first American in orbit, Major Robert White took the X-15 into space and then flew his vehicle back to a runway at Edwards Air Force Base. Thanks to the engineers and to the ace pilots who flew the X-15, mountains of new information about hypersonic flight were uncovered. Much of this research was then successfully applied to Mercury and Apollo. An often forgotten part of the super-powers' competition, the unique black vehicle, flying high above the deserts of California and Utah, consistently broke every record in the book. Today many of those records still stand. In X-15—The NASA Mission Reports, extremely rare documents from this amazing program are brought together for the first time. The CD-ROM includes hundreds of images and hours of rare video of the X-15 program, including footage of the "pink" X-15A-2; the dramatic explosion of the XLR-99 engine; comments from Joe Walker and Scott Crossfield; Pete Knight's record-breaking high-speed flight; Neil Armstrong's final flight before joining the Astronaut corps; rare silent footage of the first six research pilots; an exclusive interview with X-15 pilot William Dana; the complete documentation of every X-15 flight, including flight plans, surface-to-air transcripts, and postflight reports in the pilots' own words; a unique interactive virtual reality model of the X-15; and more.

	Format	Item No.	Price

America in Space: The First 40 Years
60 minutes/1999 **DVD** 007.0-04D $19.95

From the original Mercury flights to the International Space Station and Mars, presents the complete saga of America's first 40 years in space. Copyrighted by Finley-Holiday Films/Steve Skootsky. Public performance rights for schools and libraries. All other rights reserved.

Apollo Moon Landing: Out of This World
72 minutes/2001 **DVD** 007.3-05D $21.00
Level: Grades 4–12

From President Kennedy's challenge to Neil Armstrong's first step on the Moon, from the near disaster of Apollo 13 to the Lunar Rover missions, this historically accurate video tells of the story of mankind's greatest adventure. Witness inspiring liftoffs, the Earth from space, and dramatic moments as the Apollo astronauts explore the alien landscape of another world. Featuring superb picture and sound quality that only DVD can offer, this exclusive production is the ultimate Apollo adventure. It was painstakingly assembled from hundreds of hours of footage taken by the astronauts and live television pictures beamed from the surface of the Moon. Copyrighted by Finley-Holiday Films/Steve Skootsky.

Earthlight: Special Edition
85 minutes/1998 **DVD** 002.2-25D $21.00

Floating hundreds of miles above the Earth, load this disc into your computer or DVD player, sit back, relax, and luxuriate in Earthlight's beautiful digital video and original 5.1 channel instrumental music. You will see the thundering liftoff of *Atlantis*, the brilliant blue of the Pacific, the majesty of the Himalayas, and the vast red dunes of the Sahara. Earthlight is a hybrid DVD-Video and DVD-ROM title that includes breathtaking video of planet Earth from space. It includes 80 minutes of original Dolby Digital music, global location subtitles in 12 languages, now including Chinese, Hebrew, Arabic, and Klingon, high-resolution still images, and a Windows screen saver program.

System Requirements: DVD-Video player or DVD-ROM system with Pentium 133, 16 MB RAM, SVGA 16-bit 2MB video card, Microsoft Windows '95, 25 MB free disk space on hard drive, MPEG-2 decoder with Dolby Digital Surround Sound, DVD-ROM drive. DVD-equipped MAC will play most program components.

History of Space Flight: Reaching for the Stars
89 minutes/2001 **DVD** 007.0-05D $21.00
Level: Grades 4–12

Learn of the remarkable vision of rocket pioneer Wernher von Braun and other gifted men who worked in the early 1950s to lay the first serious plans for space travel. Features the amazing picture and sound quality that only DVD can offer, and one of the most extensive collections of historical footage, rare images, and computer animation ever assembled. From ancient Chinese rockets to Mercury, Gemini, Apollo, and the Shuttle, from the science fiction of Jules Verne to the reality of exploring distant planets, you'll view space flight as never before. Peer into the future of space travel with the latest computer animation of tomorrow's space flight concepts. Copyrighted by Finley-Holiday Films.

Mars: Past, Present, Future
83 minutes/2001 **DVD** 010.2.4-12D $21.00
Level: Grades 4–12

Presents a spectacular and highly detailed view of the planet itself, featuring the very latest images of the Martian surface. Best of all, it explores past, present, and future missions to Mars, including photos and data from Mariner, Viking, Pathfinder, and Mars Global Surveyor missions; also includes new evidence of water on Mars. From bizarre theories of early astronomers to visions of future science missions, see how discovery and exploration have changed our view of the red planet. Digitally mastered for amazing picture and

sound quality, this fully narrated DVD lets you rediscover the complete Mars story from man's earliest discovery and science fiction fascinations to the latest revealing images from Pathfinder, Mars Global Surveyor, and beyond. Copyrighted by Finley-Holiday Films.

System requirements: DVD-Video player or DVD-ROM system with Windows '95/'98 or later, Macintosh System 7.5, OS 8/9 or later.

Mars: The Red Planet
1999 **DVD** 010.2.4-11D $21.00

Explore Mars using the interactive Mars Map section, with over 700 detailed maps with zoom in/out and panning. The Art Gallery includes a Dolby Digital rendition of Gustav Holst's "The Planets", performed by Ryan Shore. Artworks from renowned Mars artists complete the Gallery. This is one of the most advanced DVD titles ever released. Mars: The Red Planet is a hybrid DVD-Video, DVD-ROM, and WebDVD title which includes 80 minutes of 5.1 Channel Dolby Digital music performed by Ryan Shore; it also features an array of video, still images, interactive maps, and historical spacecraft graphics. Advanced DVD features include multi-angle video, multi-track audio, 3-D video and still images, informational subtitles, dual operational mode, WebDVD support, and a Windows '95, '98, NT screen saver.

System requirements: DVD-Video player or DVD-ROM system with Pentium II or better CPU; Microsoft Windows '95, '98, or NT; 25 MB free disk space on hard drive; MPEG-2 decoder with Dolby Digital surround sound; and a DVD-ROM drive. DVD-equipped MAC will play title only using the built-in DVD-Video player. WebDVD features require Internet Explorer 5.0 and a PC that has the "Designed for Windows '98" logo.

Our Amazing Solar System
90 minutes/2001 **DVD** 010.2-07D $21.00
Level: Grades 4–12

With supercomputer visualizations, you will soar over the volcano-scarred landscape of Venus and journey to the Grand Canyon of Mars. Experience the eerie majesty of the giant outer planets and their amazing moons, unique gems in this wondrous solar system we call home. From comets to solar flares, from the scorched surface of Mercury to the frozen outer worlds of Neptune and Triton, this is the complete video saga of our amazing solar system. Featuring the amazing picture and sound quality that only DVD can offer, this fully narrated video reveals new worlds beyond our imagination. This is the epic adventure, as never before presented—a captivating program featuring the latest and best visuals from the golden age of space exploration. Copyrighted by Finley-Holiday Films/Steve Skootsky.

System requirements: DVD-Video player or DVD-ROM system with Windows '95/'98 or later, Macintosh system 7.5, OS 8/9 or later.

StarGaze: Hubble's View of the Universe
2000 **DVD** 002.4-09D $21.00

StarGaze brings the beauty and majesty of the universe to your home theater directly from the Hubble Space Telescope. With over an hour of the most incredible images of the universe you'll ever see, plus Dolby Digital and DTS surround sound music from 2002, StarGaze will quickly become a favorite in your DVD collection. StarGaze is an award-winning hybrid DVD-Video, DVD-ROM, and WebDVD title that presents the beauty of the universe as seen from the Hubble Space Telescope, and provides indepth facts and details about the telescope and what it has found so far. StarGaze includes many advanced DVD features including digitally mastered audio and video, Dolby Digital Surround 5.1, DTS and Dolby Digital stereo music tracks, English, French, German and Spanish narration, subtitles and menus, a TV screen saver, and a Windows screen saver program.

System Requirements: DVD-Video player or DVD-ROM system with Pentium II or better CPU, Microsoft Windows '95, '98, NT2000, 25 MB free disk space on hard drive, MPEG-2 decoder with Dolby Digital surround sound, DVD-ROM drive. DVD-equipped MAC will play title only using the built-in DVD-Video player.

Format *Item No.* *Price*

To achieve America's goals in Educational Excellence, it is NASA's mission to develop supplementary instructional materials and curricula in science, mathematics, geography, and technology. NASA seeks to involve the educational community in the development and improvement of these materials.

A select number of items are available to educators to supplement their classroom activities. There is a limited supply of the items listed below. Orders will be filled on a first-come, first-serve basis. Please contact the NASA CORE office for availability.

Adventures of Echo the Bat, The

Publication 300.1-06P $6.00
Level: Grades K–4 / 2001 shipping fee

This picture book of Echo the Bat teaches the concepts of remote sensing throughout a story of a young bat lost in Arizona. Pop-up images are incorporated into the satellite images to assist the child in recognizing land features narrated in the story. The book is accompanied by a set of activities that reinforce four basic themes or concepts fundamental to the interpretation of satellite imagery: perspective, shape and pattern, color, and texture. Activities and activity sheets are also provided on a companion Web site: *http://imagers.gsfc.nasa.gov/K-4/index.html*

Aeronautics: An Educator's Guide with Activities in Science, Mathematics, and Technology Education

EG-1999-06-108-HQ **Publication** 300.1-01P $6.00
Level: Grades K–4

The activities in this educator guide are divided into three chapters: Air, Flight, and We Can Fly, You and I. They are designed to be uncomplicated and fun, and have been tested in countless classrooms and workshops.

Apollo 7—The NASA Mission Reports

Book w/CD-ROM 400.2-12 $16.95
Level: Grades 9–Adult / 1999 Windows

See item description in the Human Space Flight—Apollo section.

Apollo 8—The NASA Mission Reports

Book w/CD-ROM 400.2-01 $16.95
Level: Grades 9–Adult / 1999 Windows

See item description in the Human Space Flight—Apollo section.

Apollo 9—The NASA Mission Reports

Book w/CD-ROM 400.2-02 $14.95
Level: Grades 9–Adult / 1999 Windows

See item description in the Human Space Flight—Apollo section.

Apollo 10 — The NASA Mission Reports

Book w/CD-ROM 400.2-04 $16.95
Level: Grades 9–Adult / 1999 Windows

See item description in the Human Space Flight—Apollo section.

Apollo 11—The NASA Mission Reports Vol. 1

Book w/CD-ROM 400.2-05 $16.95
Level: Grades 9–Adult / 1999 Windows

See item description in the Human Space Flight—Apollo section.

	Format	Item No.	Price
Apollo 11—The NASA Mission Reports Vol. 2	**Book w/CD-ROM**	400.2-06	$13.95
Level: Grades 9–Adult/1999	Windows		

See item description in the Human Space Flight—Apollo section.

Apollo 12—The NASA Mission Reports	**Book w/CD-ROM**	400.2-07	$16.95
Level: Grades 9–Adult/1999	Windows		

See item description in the Human Space Flight—Apollo section.

Apollo 13—The NASA Mission Reports	**Book w/CD-ROM**	400.2-09	$16.95
Level: Grades 9–Adult/1999	Windows		

See item description in the Human Space Flight—Apollo section.

Earth Science Elementary Publication Packet			
Level: Grades K–3	**Print Packet**	002.2-19P	$6.00

The packet includes an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

Earth Science Middle School/Secondary Publication Packet			
Level: Grades 5–12	**Print Packet**	002.2-20P	$6.00

The packet includes an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

Freedom 7—The NASA Mission Reports	**Book w/CD-ROM**	400.2-16	$16.95
Level: Grades 9–Adult/2001	Windows		

The rare documents and drawings of the Mercury-Redstone 3 mission—the flight of Freedom 7 are all gathered together in this one place. Presented herein are transcripts and documents from the NASA archives, from a time before the assimilation and reporting of mission data was a developed process. Includes: CD-ROM featuring: NASA video documentary Freedom 7, video from the Freedom 7 Earth-sky camera, video of the Freedom 7 instrument panel, videos of postflight press activities, and more.

Friendship 7—The NASA Mission Reports	**Book w/CD-ROM**	400.2-03	$14.95
Level: Grades 9–Adult/1999	Windows		

See item description in the Human Space Flight—Mercury section.

	Format	Item No.	Price
Gemini 6 — The NASA Mission Reports			
	Book w/CD-ROM	400.2-08	$16.95
Level: Grades 9–Adult/1999	Windows		

See item description in the Human Space Flight—General section.

The High Frontier			
	Book w/CD-ROM	400.2-10	$19.95
Level: Grades 9–Adult/1999	Windows		

Features a preface by Roger O'Neill, an introduction by Freeman Dyson, and essays by top experts in the field of space research, including Roger O'Neill, David Gump, Peter Glasser, Margo Deckard, George Friedman, Rick Tumlinson, and John Lewis. Man's ongoing conquest of the solar system has been much publicized for its miraculous accomplishments. What is generally less publicized are the potential uses of space beyond simply landing men on another planet. "Flags and foot prints" is something we can all be proud of, but the true value of near-Earth space lies with the possibilities for manufacturing and colonization. Processes not possible on Earth, because of atmosphere and gravity, can be employed in space to produce unique and highly desirable commodities. Habitats built in space, occupying the same orbit as the Moon and made primarily from lunar raw materials, can be the necessary answer to our desperate, ever-increasing needs for living and agricultural areas. Gerard K. O'Neill is universally recognized as the father of the "O'Neill colony" concept. Beginning in the 1970s, he took the original concepts and built from them a complete, realistic, and attainable plan—a plan to orbit permanent colonies at the L4 and L5 Lagrange points in near-Earth space, where everyday people would live, work, and play in comfort and safety in an environmentally satisfying world. In this third edition of The High Frontier is O'Neill's original blueprint for the future, accompanied by new chapters presenting the up-to-date technologies and social considerations that impact upon and further justify the plan. This is a vision of a possible hopeful future that could already have come to pass if the human race had committed to it—it is still a source of hope for the future. Space and all its advantages need not be limited to only those with "the right stuff", it should and can be for all of us. Includes: CD-ROM featuring: Presentations by Gerard O'Neill and the Space Studies Institute, and more than an hour of MPEG video.

Mars—The NASA Mission Reports			
	Book w/CD-ROM	400.2-11	$21.95
Level: Grades 9–Adult/1999	Windows		

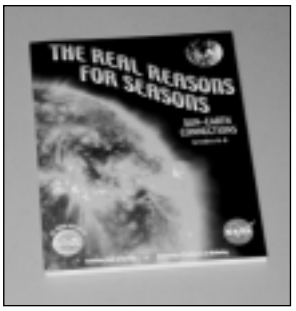
See item description in the Space Science—Mars section.

NASA Student Glovebox: An Inquiry-Based Technology Educator Guide			
EG-2000-09-004-GRC	**Guide and Poster Set**	300.1-07P	$6.00
Level: Grades 5–8			

A Glovebox is a sealed container with built-in gloves. Astronauts perform small experiments and test hardware inside of them. Gloveboxes have flown on the Space Shuttle and Mir. The International Space Station will have a permanent Glovebox on the U.S. Laboratory, Destiny. The sealed Glovebox keeps flames, particles, fumes, and spilt liquids away from crew members and out of the cabin air. A closed environment may be essential to control experiment variables.

NASA's Student Glovebox is a middle school Educational Product for use in self-contained classrooms or in technology and physical science classes. Includes an educator guide and 10 posters. Additional posters are also available for an additional cost.

	Format	Item No.	Price
Real Reasons for Seasons, The			
	Book w/CD-ROM	002.2-24P	$6.00
Level: Grades 6–8/2001	Windows '95/Mac		



This guide was developed through a partnership between the U.C. Berkeley Lawrence Hall of Science's Great Explorations in Math and Science Program (GEMS) and NASA's Sun-Earth Connection Education Forum. This GEMS guide is aimed at helping students arrive at a clear understanding of seasons as they investigate the connections between the Sun and Earth. Along the way, students take a "Trip to the Sun", determine the real shape of the Earth's orbit, evaluate actual data on world temperature and hours of sunlight in different locations, and model how the angle at which sunlight hits the Earth affects its concentration. Throughout these engaging activities, students gain important standards-based science and mathematics content, and develop abilities essential in scientific investigation. A CD-ROM, included in this guide, offers a rich collection of helpful resources from NASA and other sources, Web links, and software programs. One of the software programs included is "Seasons", created by Riverside Scientific in St. Paul, Minnesota, which is a very powerful modeling system that allows you to change the Earth's orbit and the tilt of the Earth's axis and then predict how these changes will affect the seasons. Also available online at *http://www.lhs.berkeley.edu/GEMS/GEMSSeasons.html*

Rockets: A Teacher's Guide with Activities in Science, Mathematics, and Technology

EG-1999-06-108-HQ	**Publication**	300.1-02P	$6.00
Level: Grades K–12			

Learn all about the history, scientific principles, and mathematics of rockets through exciting problem-solving and cooperative learning activities.

Saturn Educator Guide

EG-1999-12-008-JPL	**Book w/CD-ROM**	010.2.6-02P	$15.00
Level: Grades 5–8			

The guide consists of three major sections: Lessons, Enrichments, and Appendices. Includes opportunities to use the contexts of Saturn and the Cassini-Huygens mission to enrich your curricular units in science. The lessons are grounded in the National Science Education Standards and constructivist learning theory, as well as enhanced by the excitement of real-life space science and engineering. The guide also offers highlights of the interconnections between Saturn and other areas of human endeavor, such as art, language, history, and mythology. This unique blend will enable a grander diversity of learners to share and benefit from the excitement of Cassini-Huygens mission discoveries. The "Ways of Seeing" CD-ROM is included. Additional copies of the CD-ROM can be purchased individually.

SOHO Portfolio of Images

Level: Grades K–12	**Litho Set**	300.1-05P	$6.00

A set of 14 pages of the Sun and space weather, with images, explanatory text, and Web references on the back of each page. Most of the images, including eclipses, solar storms, and solar prominences, are from the Solar and Heliospheric Observatory (SOHO).

Solar System Braille Map

	Printed Map	010.2-06P	$12.00

This map has been supplied by Southeast Regional Clearinghouse at the College of Charleston through special NASA funding for use in classrooms. You can visit their Web site for additional information under the "Special Needs" section at *http://serch.cofc.edu/serch/*

	Format	*Item No.*	*Price*
Solar System Lithograph Set for Space Science LS-2001-08-002-HQ Level: Grades K–12	**Litho Set**	300.1-03P	$6.00

This set contains the following lithographs: Our Solar System; Our Star—The Sun; Mercury; Venus; Earth; Moon; Mars; Asteroids; Jupiter; Moons of Jupiter; Saturn; Uranus; Neptune; Pluto and Charon; and Comets.

Space Food and Nutrition: An Educator's Guide with Activities in Science and Mathematics EG-1998-09-105-HQ Level: Grades K–8	**Publication**	300.1-04P	$6.00

From John Glenn's mission to orbit Earth to the International Space Station program, space food research has met the challenge of providing food that tastes good and travels well in space. Explorers have always had to face the problem of how to carry enough food for their journeys. Whether those explorers are onboard a sailing ship or on the Space Shuttle, adequate storage space has been a problem. Food needs to remain edible throughout the voyage, and it also needs to provide all the nutrients required to avoid vitamin-deficiency diseases such as scurvy. Find out how microgravity conditions experienced in space affect food packaging.

Sun-Earth Day Kit Level: Grades K–12	**Print Packet**	002.2-22P	$6.00

There are 7–10 educational products in the packet meant to support and provide additional knowledge for those participating in Sun-Earth Day. For additional information, visit their Web site at *http://sunearth.gsfc.nasa.gov/SunEarthDay*. The packet will include an assortment of the following materials: educator guides, litho sets, CD-ROMs, folders, posters, and bookmarks.

X-15—The NASA Mission Reports Level: Grades 9–Adult/1999	**Book w/CD-ROM** Windows	400.2-13	$21.95

See item description in the History of Flight section.

	Format	Item No.	Price
Aeronautics: A History of Flight 46 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-01	$13.00

Views flight from the earliest ideas to the latest airplanes. Chronicles aviation from ancient Chinese kites to the modern airplane.

Aeronautics: Principles of Flight 70 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-02	$18.50

Explains aerodynamics in detail.

Astro 1: Seeing the Hidden Cosmos 24 slides with script and activity book Level: Grades 6–8	**SLIDE**	100.0-34	$8.50

Describes the Astro 1 mission and basic concepts pertaining to the electromagnetic spectrum and astronomy, including x-rays, ultraviolet, visible, and infrared images of interesting astronomical objects.

ATLAS 1: Studying Mysteries in Earth's Atmosphere 20 slides with descriptions Level: Grades 6–8	**SLIDE**	100.0-38	$8.50

Describes the first Atmospheric Laboratory for Applications and Science (ATLAS) mission dedicated to a better understanding of the physics and chemistry of Earth's atmosphere. Copyrighted by the Essex Corporation.

Best of the Space Shuttle/1977–1984 40 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-20	$11.50

Examines Space Shuttle highlights from the first dramatic flights to the ongoing array of spectacular spacewalks and experiments. Produced by Finley-Holiday Films Corporation.

Comet Impact '94 20 slides with descriptions	**SLIDE**	100.0-46	$8.50

Features Hubble Space Telescope views of several of the fragment impacts when Comet Shoemaker-Levy 9 collided with Jupiter in July 1994. Includes additional images from other observatories.

Earth Observing System 25 slides with descriptions	**SLIDE**	100.0-42	$8.50

Presents a variety of images related to the Earth Observing System, the most ambitious science mission ever undertaken. This slide set is part of the Goddard Space Flight Center's Mission to Planet Earth.

Earth/Space Science Slide Set for Educators 122 slides with descriptions Level: Grades 9–Adult	**SLIDE**	100.0-47	$60.00

Contains slides and documentation on the most recent space-based observations NASA has obtained regarding Earth system science. The slides are organized around seven themes: Clouds and Radiation; Ocean Productivity, Circulation, and Air-Sea Exchange; Greenhouse Gases; Changes in Land Use, Land Cover, Primary Productivity, and the Water Cycle; the Role of Polar Ice Sheets and Sea Level; Ozone Depletion; and the Role of Volcanoes in Climate Change.

	Format	Item No.	Price
Earthview 4 slides with descriptions	**SLIDE**	100.0-29	$3.00

Presents photographs of Earth taken from four different Apollo missions. Provided by NASA's Public Affairs Office.

Expanding the Universe: Deep Space and Planets Set XV 1997/20 slides	**SLIDE**	100.0-78	$8.00

Contains images of Saturn's aurora, the glowing outer ring around Supernova 1987A, and the birth of planetary nebulae as they emerge from their cocoons of gas and dust.

Expanding the Universe with the Hubble Space Telescope II 20 slides with descriptions	**SLIDE**	100.0-58	$8.00

Offers images from the first 3 years of operation, including planets, stars, and distant galaxies. All images in this set are in the public domain.

Expanding the Universe with the Hubble Space Telescope V 20 slides with description	**SLIDE**	100.0-60	$8.00

Offers spectacular and unaberrated views of the solar system, our Milky Way galaxy, and galaxies beyond. All images in this set are in the public domain.

Expanding the Universe with the Hubble Space Telescope VI 20 slides with descriptions	**SLIDE**	100.0-61	$8.00

Provides spectacular images of the cosmos taken with the Hubble Space Telescope, contributing new and comprehensive information about the composition and evolution of the universe. All images in this set are in the public domain.

Expanding the Universe with the Hubble Space Telescope VIII 1996/20 slides	**SLIDE**	100.0-71	$8.00

Contains images of dramatic changes on some of the planets within our solar system, star-forming jets, planetary nebulae, and the ancient asteroid Vesta.

Expanding the Universe with the Hubble Space Telescope IX 1996/20 slides	**SLIDE**	100.0-72	$8.00

Contains images of Saturn's ring system, Jupiter's volcanic moon Io, Comet Hale-Bopp, and stellar "eggs" in M16, the Eagle nebula.

Expanding the Universe with the Hubble Space Telescope X 1996/20 slides	**SLIDE**	100.0-73	$8.00

Contains images of the Orion Nebula, Hubble Deep Field, the Egg Nebula, and Comet Hyakutake.

Expanding the Universe with the Hubble Space Telescope XI 1997/20 slides	**SLIDE**	100.0-74	$8.00

Contains images of Jupiter, Comet P/Shoemaker-Levy 9, Uranus, and the Crab Nebula. Also includes the Hubble's 100,000th exposure in July 1996, a snapshot of a distant quasar.

Expanding the Universe with the Hubble Space Telescope XII 1997/20 slides	**SLIDE**	100.0-75	$8.00

Contains images of distant galaxies, Jupiter's volcanic moon Io, quasars, the Cartwheel galaxy, and Supernova 1987 and its neighborhood.

	Format	Item No.	Price
Expanding the Universe With the Hubble Space Telescope XIV 1997/20 slides	**SLIDE**	100.0-77	$8.00

Contains images of the first direct look, in visible light, at a neutron star, as well as many Mars images, including the season retreat of Mars' north polar cap.

Exploration of Venus 20 slides with descriptions	**SLIDE**	100.0-44	$8.50

Traces the history of the exploration of Venus from ground-based observations with telescopes, through radar measurements from Earth, to the Mariner, Pioneer, Venera, and Magellan spacecraft that have flown in the past and gone into orbit around the planet. Prepared by the Solar System Exploration Division at NASA Headquarters. Copyrighted by Lowell Observatory.

Exploring Meteorite Mysteries 48 slides with descriptions Level: Grades 5–12	**SLIDE**	100.0-66	$12.00

Highlights many of the meteorites that have been collected and studied by scientists. Also discusses impact craters and the classification and formation of meteorites.

Fragile Earth 25 slides with descriptions	**SLIDE**	100.0-26	$8.50

Focuses on many of the conditions that affect Earth's crust, waters, and atmosphere. Space photographs and satellite images illustrate how both nature and people have changed Earth, and not always for the better. Encourages students to become active participants in restoring our sick and injured Earth to good health. Produced by the Smithsonian.

Full Earth 6 slides with descriptions	**SLIDE**	100.0-30	$3.50

Offers photographs of Earth taken by satellites and various Apollo missions. Provided by NASA's Public Affairs Office.

Galileo Mission at Jupiter: Volume 2 20 slides with descriptions	**SLIDE**	100.0-79	$8.00

During its first year of residence in the Jovian system, Galileo had two close encounters with Ganymede, one with Callisto, close passes above Jupiter itself, and a Europa flyby shortly thereafter. The images in the set, though not a complete record of Galileo's travels to date, provide an overview of some of Galileo's most intriguing views of Jupiter and its satellites. Produced by Finley-Holiday Film Corporation. No copyright protection is asserted for these images.

Galileo Mission at Jupiter: Volume 3 20 slides with descriptions	**SLIDE**	100.0-80	$8.00

This slide set features images acquired by Galileo's Solid State Imaging System during the third through sixth orbits around Jupiter. It includes the highest resolution prime-mission data of the icy satellite Callisto, pictures from two close flybys of Europa, images of volcanic eruptions on Io, photos of Jupiter's complex and turbulent atmosphere, and a rare image of Jupiter's slender ring system. Manufactured by Finley-Holiday Film Corporation. No copyright protection is asserted for these images.

	Format	Item No.	Price
Galileo Mission to Jupiter 20 slides with descriptions	**SLIDE**	100.0-55	$8.00

Provides an overview of the Galileo mission prior to the probe's descent. Includes photographs taken during flybys of the Moon, Earth, Gaspra, Ida, and Dactyl. Produced by Finley-Holiday Film Corporation. All images in this set are in the public domain.

The Hubble Space Telescope 1996 30 slides with descriptions	**SLIDE**	100.0-67	$35.00

Includes detailed views of Earth's neighboring planets, Martian dust storms, Saturn's ring plane, the surface of Pluto, the Helix Nebula, the Crab Nebula, and more. Produced by the Astronomical Society of the Pacific.

Hubble Space Telescope's Greatest Hits 20 slides with descriptions	**SLIDE**	100.0-62	$8.00

Includes some of the most spectacular images ever captured by the Hubble Space Telescope, including Venus, Saturn, star clusters, black holes, and peculiar galaxies. All images in this set are in the public domain. Produced by Finley-Holiday Film Corporation.

Hubble Space Telescope's Second Servicing Mission XIII 1997/20 slides	**SLIDE**	100.0-76	$8.00

Chronicles the second Hubble servicing mission from the liftoff of Space Shuttle *Discovery* to the first images of Supernova 1987A as seen with the Hubble's new spectrograph.

Human Space Flight: A History 78 slides with audio cassette Level: Grades 7–Adult	**SLIDE**	100.0-05	$21.00

Chronicles human space flight with emphasis on the lunar missions.

Human Space Flight: Living in Space 37 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-03	$11.00

Explain how astronauts live and work in the Space Shuttle environment.

Magellan Mission to Venus 20 slides with descriptions	**SLIDE**	100.0-37	$8.00

Offers a variety of pictures taken of Venus when Magellan began its orbit on August 10, 1990. Synthetic aperature radar is the instrument used to look through the thick clouds perpetually shielding the surface of Venus.

Manned Space Flights 20 slides with descriptions	**SLIDE**	100.0-63	$8.00

Represent the era of the Mercury, Gemini, Apollo, and Skylab missions, 1961 through the mid-1970s. Produced by Finley-Holiday Film Corporation.

Mars Pathfinder/Sojourner Return to the Red Planet 20 slides with descriptions	**SLIDE**	100.0-69	$8.00

Contains an assortment of slides highlighting prelaunch preparations, trajectory, and launch and landing activities for Mars Pathfinder and Sojourner. Produced by the Finley-Holiday Film Corporation. No copyright protection is asserted for these images. Photo credits to read "NASA/JPL", unless otherwise noted.

	Format	Item No.	Price
Mars Pathfinder/Sojourner Success, July 1997 20 slides with descriptions	**SLIDE**	100.0-70	$8.00

Provides the first images of the rocky, barren Martian world. Images include the two double hills called "Twin Peaks" and the rocks "Yogi" and "Barnacle Bill". Produced by the Finley-Holiday Film Corporation. No copyright protection is asserted for these images. Photo credits to read "NASA/JPL", unless otherwise noted.

Microgravity Science 24 slides with descriptions Level: Grades 9–12	**SLIDE**	100.0-45	$8.50

Examines many of the microgravity experiments conducted on recent Shuttle missions and the potential benefits this research will have for humankind.

Milestones of Flight 38 slides with descriptions	**SLIDE**	100.0-25	$11.00

Shows scenes from the National Air and Space Museum's "Milestones of Flight" gallery. Produced by the Smithsonian Institution.

Moon: The Geologic History and Future Exploration, The 36 slides with descriptions and teacher's guide	**SLIDE**	100.0-48	$15.00

Emphasizes the Moon's geology, geologic history, and origin. Shows how the astronauts explored the Moon and gives a brief history lesson on what we know about the Moon from telescopic observations. Addresses some of the exciting possibilities that await us when humans return to the Moon to stay. All slides are from NASA, except where specific copyright is noted.

NASA's First Service Mission to the Hubble Space Telescope 20 slides with descriptions	**SLIDE**	100.0-59	$8.00

Details the most difficult servicing mission ever attempted. The astronaut crew of *Endeavour* replaced solar arrays and other components to fully restore the telescope's ability to image individual objects in distant crowded fields.

Planets 11 slides with descriptions	**SLIDE**	100.0-27	$4.00

Presents a combination of pictures taken from spacecraft and artist's conceptions of the planets.

Propulsion: Launch Vehicles 53 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-07	$14.50

Looks at past and present rockets used as launch vehicles.

Propulsion: Principles of Rocketry 40 slides with audio cassette Level: Grades 7–12	**SLIDE**	100.0-06	$11.50

Explains a rocket propulsion system.

Propulsion: Space Shuttle 48 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-08	$13.50

Highlights the NASA Space Transportation System, its functions, and possible uses for the future.

Salute to Apollo, A
37 slides with audio cassette **SLIDE** 100.0-31 $11.00
Level: Grades 7–12

Chronicles the Apollo missions, highlighting Apollo 11, the first mission to land on the Moon.

Science From New Worlds
20 slides with descriptions and activity guide **SLIDE** 100.0-43 $8.50

Features some of the best images captured by NASA's spacecraft, including images of comets, asteroids, and planets. Supporting notes provide background on the history of planetary exploration and information on major discoveries.

The Search for Planets Around Other Stars
30 slides with descriptions **SLIDE** 100.0-68 $35.00

Explains the methods used to detect planetary bodies that orbit nearby stars. Includes artist's impressions of how some of these planetary bodies might look. Inspired by the recent discoveries of Dr. Geoff Marcy and Paul Butler. Produced and copyrighted by the Astronomical Society of the Pacific.

SIR-C/X-SAR Imaging Radar "Seeing the Earth in a New Way"
20 slides with descriptions **SLIDE** 100.0-56 $8.00

Features the Spaceborne Imaging Radar-C/X-Band Synthetic Aperature Radar (SIR-C/X-SAR), a joint mission of the German, Italian, and U.S. space agencies that is part of NASA's Mission to Planet Earth. The images contained in this set were collected on two Space Shuttle flights of SIR-C/X-SAR in April and October 1994. All images in this set are in the public domain.

Space Exploration: Communications Using Spacecraft
80 slides with audio cassette **SLIDE** 100.0-12 $21.00
Level: Grades 9–12

Focuses on communications satellites and how they benefit business, government, and the public.

Space Exploration: The Solar System
60 slides with audio cassette **SLIDE** 100.0-09 $16.00
Level: Grades 5–12

Analyzes information discovered about the planets.

The Space Frontier
49 slides with audio cassette **SLIDE** 100.0-24 $14.00
Level: Grades 7–12

Begins with a detailed look at Skylab and proceeds to outline the development of the Space Station planned for the 1990s. Highlights the uses for the future station and explains its importance to our country's future.

Stars and Galaxies
8 slides with descriptions **SLIDE** 100.0-28 $3.50

Shows a collection of star clusters, nebula, and galaxies. Many photos are from the U.S. Naval Observatory. Provided by NASA's Public Affairs Office.

The Story of the Flight of Apollo-Soyuz
40 slides with audio cassette **SLIDE** 100.0-17 $11.50
Level: Grades 4–12

Highlights the first meeting between America and Russia in space. Three astronauts and two cosmonauts rendezvoused in orbit, docked, and entered each other's craft.

Story of Our Universe, The
40 slides with audio cassette **SLIDE** 100.0-21 $11.50
Level: Grades 4–12

Explores the universe and all of its other worldly phenomena. Produced by Finley-Holiday Films Corporation.

Ten Years of Discovery: Hubble Space Telescope
40 slides with descriptions **SLIDE** 100.0-81 $11.50

The Hubble Space Telescope has been making science news for 10 years. The discoveries have been invaluable in current research, the images have become classroom décor, and it is recognized by everyone as part of the American success story. In honor of the anniversary celebration, this 40-slide set of Hubble images and engineering accomplishments identify the science and engineering of the Hubble. The slide descriptions give information about each slide and may be used at various content levels. The slide set and additional information can be found on their Web site at *http://hubble.stsci.edu/sci.d.tech/discoveries/10th/views/portfolio/slide01.shtml*

Transformations of Flight
66 slides with descriptions **SLIDE** 100.0-32 $22.00
Level: Grades K–3

Presents the numbers 1 through 10 being transformed into 10 different important air- and spacecraft in the history of flight. These slides successfully complement the videotape. Produced by the Smithsonian.

The Ultimate Field Trip: An Astronaut's View of the Earth
24 slides with descriptions **SLIDE** 100.0-57 $8.50
Level: Grades K–Adult

Includes a collection of 24 views of the Earth witnessed by NASA Astronaut Dr. Kathryn Sullivan while on orbit aboard the Space Shuttle.

United States Geography: Appalachians, Ohio River Valley, Great Lakes
20 slides with descriptions **SLIDE** 100.0-50 $10.00
Level: Grades K–Adult

Offers photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains. The list accompanying each set contains the photo number by which additional prints can be ordered.

United States Geography: East Coast States, New England to Florida
20 slides with descriptions **SLIDE** 100.0-49 $10.00
Level: Grades K–Adult

Presents photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains. The list accompanying each set contains the photo number by which additional prints can be ordered.

United States Geography: Great Plains and Mississippi River Valley
20 slides with descriptions **SLIDE** 100.0-51 $10.00
Level: Grades K–Adult

Shows photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

	Format	Item No.	Price
United States Geography: Rocky Mountains and Southwest 20 slides with descriptions Level: Grades K–Adult	**SLIDE**	100.0-52	$10.00

Offers photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

United States Geography: United States Cities 60 slides with descriptions Level: Grades K–Adult	**SLIDE**	100.0-54	$26.00

Shows photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

United States Geography: West Coast States, Alaska, and Hawaii 20 slides with descriptions Level: Grades K–Adult	**SLIDE**	100.0-53	$10.00

Presents photographs taken by astronauts from space aboard the Space Shuttle. Features human-made cities, roads, airports, and dams, as well as natural settings, including oceans, rivers, mountains, and plains.

Viking—Mars Landing 40 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-16	$11.50

Shows that the Viking 1 and 2 missions radically changed the scientific community's view of Mars, as scientists studied photos revealing giant mountains, canyons, and plains. Produced by Finley-Holiday Film Corporation.

Volcanoes of Hawaii and the Planets 20 slides with descriptions Level: Grades 9–Adult	**SLIDE**	100.0-41	$8.00

Compares landforms in Hawaii and on the planets. Prepared for the Hawaii Space Grant College by Peter J. Mouginis-Mark.

Voyager Encounters Neptune 20 slides with descriptions	**SLIDE**	100.0-33	$8.00

Presents color photographs taken when Voyager encountered Neptune in August 1989. Includes pictures of the Great Dark Spot, Neptune's rings, and Triton.

Voyager 2 Encounters Saturn 40 slides with audio cassette Level: Grades 4–12	**SLIDE**	100.0-19	$11.50

Illustrates Voyager's most significant discoveries about Saturn, including incredible rings, erupting volcanoes, and cyclonic storms. Produced by Finley-Holiday Films Corporation.

Voyager Mission to Uranus 20 slides with descriptions	**SLIDE**	100.0-64	$8.00

Offers a selection of images of Uranus, its system of rings, and its moons from Voyager 2's encounter with Uranus in 1986.

	Format	Item No.	Price

Spacecraft Structures Kit for the Earth-to-Orbit Engineering Design Challenges
KIT 300.0-41A $25.00

Kit Includes:

50	Craft Sticks	2	35mm Film Cans
10	Dowels	1	Cloth Bag
1	Hot Glue Gun	1	Brass Launch Tube
1	Roll Packing Tape		
6	Glue Sticks	1	Hinge
6 pcs.	Corrugated Cardboard	2	4 oz. Plastic Cups
6	Flat Head Wood Screws		

PLEASE NOTE: The items in this kit must be used under parental and/or teacher supervision.

Thermal Protection Systems Kit for the Earth-to-Orbit Engineering Design Challenges
KIT 300.0-41B $25.00

Kit Includes:

6	Wood Screws	3	Dowels
1	Roll Packing Tape	1	Hot Glue Gun
4	Right Angle Brackets	6	Glue Sticks
3 pcs.	Aluminum Foil 4 x 4	3	Brass Machine Screws
3 pcs.	Copper Wire Cloth		

PLEASE NOTE: The items in this kit must be used under parental and/or teacher supervision.

Toys in Space Activity Kit
10-piece set **KIT** 006.3-07P $30.00

Contains the 10 toys Shuttle astronauts carried with them on STS 51-D. Designed to be used with the "Toys in Space" videotape programs.

Contents of Toy Kits may differ slightly from photo. Toys subject to availability.

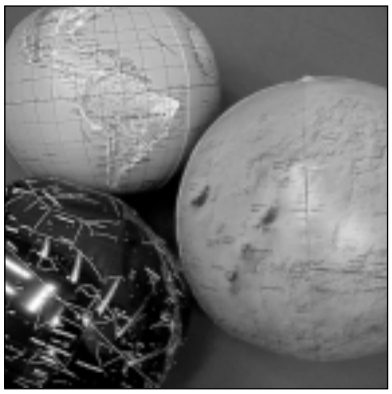
Toys in Space II Activity Kit
7-piece set **KIT** 006.3-12P $25.00

Contains seven of the toys Shuttle astronauts carried with them on mission STS-54. Designed to be used with the physics of "Toys in Space" and "Toys In Space II" videotape programs. Contains the following toys: car and track, basketball with hoop, magnetic marbles, swimming toy, gravitron, flipping toy, and balloon helicopter.

Contents of Toy Kits may differ slightly from photo. Toys subject to availability.

Polo T-Shirt	300.0-02	$25.00
Available M, L, XL/100% preshrunk Cotton (color may vary)		
Embroidered Hat	300.0-04B	$8.00
(embroidered design, khaki and navy w/adjustable straps)		

Bic-Click Pen w/NASA Logo	300.0-06	$0.80
Pencil w/NASA Logo	300.0-07	$0.25
Spiral Notebook/80 sheets/college ruled	300.0-32	$2.00
Eraser Aircraft or Shuttle	300.0-13	$0.40



Inflatable Models (not for children under 3 years of age)		
Mars	300.0-38A	$5.00
Stellar (Night Sky)	300.0-38B	$5.00
Topographical Earth	300.0-38C	$5.00

NASA Vector Logo Patch	300.0-05V	$2.00
Space Shuttle Patch	300.0-05S	$2.00
American Flag Patch	300.0-05F	$2.00

Saturn V Model Replica w/Patch	300.0-18	$8.00
Shuttle Astronaut Replica w/Patch	300.0-19	$8.00
Space Shuttle Replica w/Patch	300.0-24	$8.00
John Glenn Astronaut Replica w/Patch	300.0-33	$8.00

Astronaut Slinky "Shuttle Sam"	300.0-43	$5.00
NASA Vector Logo Key Chain	300.0-37	$2.50
NASA Logo Lapel Pin w/Fastener	300.0-31	$2.00

Astronaut Ice Cream	300.0-09	$1.75
(natural neopolitan flavor)		
Water Bottle w/NASA Logo	300.0-34	$2.50
(squeeze bottle w/pop-top opener)		

Evolution of the Space Shuttle	300.0-39	$7.00
(5-piece set, not for children under 3 years of age)		
NASA's Manned Launch Vehicles	300.0-40	$7.00
(5-piece set, not for children under 3 years of age)		

Action Figures (5 1/2-inch bendable characters)		
Roger Wilco—Airplane Pilot	300.0-42A	$4.00
Bullet—Jet Pilot	300.0-42B	$4.00
Commander Galaxy—Astronaut	300.0-42C	$4.00

All Items Subject to Availability

Pencil Sharpeners (not for children under 3 years of age):

Full-Stack Shuttle	300.0-12	$2.00
Die-Cast Metal Shuttle	300.0-16	$2.00
Stealth Fighter Jet	300.0-36	$2.00

Space Shuttle Wood Kit w/Decals (for older students, glue not included)	300.0-17	$3.00
Earth Round Playing Cards	300.0-35	$3.00
Ruler w/NASA Logo (not shown)	300.0-15	$2.00

Action Figures Key Chain (4-inch bendable characters)

Commander Galaxy—Astronaut	300.0-42D	$2.40
Roger Wilco—Airplane Pilot	300.0-42E	$2.40

Action Sets (Vehicle and Action Figure):

Lunar Rover w/Booster Figure	300.0-42F	$12.00
Jet Plane w/Tornado Figure	300.0-42G	$12.00
Spaceship w/Neutron and Swat Figures	300.0-42H	$16.00

Individual Toys for Use with "Toys in Space" Videotapes

Gyroscope	300.0-25	$5.00
Car and Track	300.0-26	$6.00
Magnetic Marbles	300.0-27	$2.00

(Complete kits are also available—see below)

Wheelo	300.0-28	$3.00
Gravitron	300.0-29	$7.00
Balloon Helicopter	300.0-30	$1.00

All Items Subject to Availability

To help disseminate educational materials, NASA's Education Division has established the NASA Educator Resource Center Network (ERCN). ERCs are located on or near NASA Field Centers, as well as planetariums, museums, colleges, universities, and other nonprofit organizations around the United States. A list of the ERCs located at NASA Field Centers, as well as information on the geographic region served by each Field Center, follows. A list of the entire ERCN begins on the next page or can be found at *http://education.nasa.gov/ercn*

NASA Field Center Educator Resource Centers

Alaska, Northern California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming
NASA Ames Research Center
NASA Educator Resource Center
Mail Stop 253-2
Moffett Field, CA 94035-1000
Phone: (650) 604-3574
FAX: (650) 604-3445
http://amesnews.arc.nasa.gov/erc/erchome.html

Arizona, Southern California
NASA Educator Resource Center for
NASA Dryden Flight Research Center
45108 North Third Street East
Lancaster, CA 93535
Phone: (661) 948-7347
FAX: (661) 948-7068
http://www.dfrc.nasa.gov/trc/ERC

California
NASA Educator Resource Center for
NASA Jet Propulsion Laboratory
Village at Indian Hill
1460 East Holt Avenue, Suite 20
Pomona, CA 91767
Phone: (909) 397-4420
FAX: (909) 397-4470
http://learn.jpl.nasa.gov/resources/resources_index.html

Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
NASA Glenn Research Center
NASA Educator Resource Center
21000 Brookpark Road, MS 8-1
Cleveland, OH 44135
Phone: (216) 433-2017
FAX: (216) 433-3601
http://www.grc.nasa.gov/WWW/PAO/html/edteachr.htm

Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
NASA Goddard Space Flight Center
NASA Educator Resource Center
Mail Code 130.3
Greenbelt, MD 20771
Phone: (301) 286-8570
FAX: (301) 286-1781
http://www.gsfc.nasa.gov/vc/erc.htm

Virginia's and Maryland's Eastern Shores
NASA Goddard Space Flight Center/Wallops Flight Facility
NASA Educator Resource Center
Building J-17
Wallops Island, VA 23337
Phone: (757) 824-2298
FAX: (757) 824-1776
http://www.wff.nasa.gov/~WVC/Educator%20Resource%20Center.htm

Colorado, Kansas, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas
NASA Educator Resource Center for
NASA Johnson Space Center
Space Center Houston
1601 NASA Road One
Houston, TX 77058
Phone: (281) 244-2129
FAX: (281) 483-9638
http://www.spacecenter.org/educator_resource.html

NASA Field Center Educator Resource Center

Florida, Georgia, Puerto Rico, Virgin Islands
NASA Kennedy Space Center
NASA Educator Resource Center
Mail Code ERC
Kennedy Space Center, FL 32899
Phone: (321) 867-4090
FAX: (321) 867-7242
http://www-pao.ksc.nasa.gov/kscpao/educate/teacher.htm#educate

Kentucky, North Carolina, South Carolina, Virginia, West Virginia
NASA Educator Resource Center for
NASA Langley Research Center
Virginia Air and Space Center
600 Settlers Landing Road
Hampton, VA 23669-4033
Phone: (757) 727-0900, Ext. 757
FAX: (757) 727-0898
http://www.vasc.org/erc/

Alabama, Arkansas, Iowa, Louisiana, Missouri, Tennessee
NASA Educator Resource Center for
NASA Marshall Space Flight Center
U.S. Space and Rocket Center
One Tranquility Base
Huntsville, AL 35807
Phone: (256) 544-5812
FAX: (256) 544-5820
http://erc.msfc.nasa.gov

Mississippi
NASA Stennis Space Center
NASA Educator Resource Center
Building 1200
Stennis Space Center, MS 39529-6000
Phone: (228) 688-3338
FAX: (228) 688-2824
http://education.ssc.nasa.gov/erc/erc.htm

NASA Educator Resource Centers

Alabama
NASA Educator Resource Center for
NASA Marshall Space Flight Center
U.S. Space and Rocket Center
One Tranquility Base
Huntsville, AL 35807
Phone: (256) 544-5812
FAX: (256) 544-5820
http://erc.msfc.nasa.gov

Alaska
Alaska Science Center
Alaska Pacific University
4101 University Drive
Anchorage, AK 99508
Phone: (907) 564-8280
FAX: (907) 564-8396
http://www.alaskapacific.edu/Science

Arizona
University of Arizona Space Sciences Building
Lunar and Planetary Laboratory
1629 E. University Boulevard
Tucson, AZ 85721
Phone: (520) 621-6947
FAX: (520) 621-4933

Arkansas
Center for Mathematics and Science Education
Arkansas NASA Educator Resource Center
University of Arkansas
106 Ozark Hall
Fayetteville, AR 72701
Phone: (501) 575-3875
FAX: (501) 575-5680
http://www.uark.edu/~k12info/cmase.htm

California
California State University—Fresno
NASA SJV RERC
5005 N. Maple Avenue, MS 01
Fresno, CA 93740-8025
Phone: (559) 278-0377
FAX: (559) 278-0404

NASA Ames Research Center
NASA Educator Resource Center
Mail Stop 253-2
Moffett Field, CA 94035-1000
Phone: (650) 604-3574
FAX: (650) 604-3445
http://amesnews.arc.nasa.gov/erc/erchome.html

NASA Educator Resource Center for
NASA Dryden Flight Research Center
45108 North Third Street East
Lancaster, CA 93535
Phone: (661) 948-7347
FAX: (661) 948-7068
http://www.dfrc.nasa.gov/trc/ERC

NASA Educator Resource Center for
NASA Jet Propulsion Laboratory
Village at Indian Hill
1460 East Holt Avenue, Suite 20
Pomona, CA 91767
Phone: (909) 397-4420
FAX: (909) 397-4470
http://learn.jpl.nasa.gov/resources/resources_index.html

California Science Center
700 State Drive
Los Angeles, CA 90037
Phone: (213) 744-7418
FAX: (213) 744-7427
http://www.casciencectr.org

Endeavour Center
Vandenburg Air Force Base
One Carob Street
Vandenburg AFB, CA 93437
Phone: (805) 734-1747
FAX: (805) 734-1030
http://www.endeavours.org

Colorado
U.S. Space Foundation
NASA RERC, Suite 2301
2860 South Circle Drive
Colorado Springs, CO 80906-4184
Phone: (719) 576-8000
FAX: (719) 576-8801
http://www.spacefoundation.org/education/erc

Connecticut
Aerospace and Environmental Education
Resource Center
Eastern Connecticut State University
Webb Hall, Room 144
83 Windham Street
Willimantic, CT 06226
Phone: (860) 465-4532
FAX: (860) 465-5099

Delaware
Delaware Aerospace Center
500 C Duncan Road
Wilmington, DE 19809
Phone: (302) 454-2432
FAX: (302) 834-1369
http://www.dasef.org

District of Columbia
National Air and Space Museum
Educational Services Center
Room P700, MRC 305
Washington, DC 20560
Phone: (202) 357-4223
FAX: (202) 633-8928

University of the District of Columbia
4200 Connecticut Avenue NW
Building 42, Room 213
Washington, DC 20008
Phone: (202) 274-6287
FAX: (202) 274-5094

Florida
NASA Kennedy Space Center
NASA Educator Resource Center
Mail Code ERC
Kennedy Space Center, FL 32899
Phone: (321) 867-4090
FAX: (321) 867-7242
http://www-pao.ksc.nasa.gov/kscpao/educate/teacher.htm#educate

Georgia
Southern Polytechnic State University
1100 S. Marietta Parkway
Marietta, GA 30060-2896
Phone: (770) 528-6272
FAX: (770) 528-4980
http://www.spsu.edu/gystc1

Hawaii
State of Hawaii Department of Education
Barbers Point Elementary School
3001 Boxer Road
Kapolei, HI 96707-2103
Phone: (808) 673-7410
FAX: (808) 682-3924

Idaho
University of Idaho
College of Education
NASA RERC
Moscow, ID 83844-3080
Phone: (208) 885-7536
FAX: (208) 885-0560
http://www.uidaho.edu/ed/imtc/nasa_rerc

Illinois
Museum of Science and Industry
NASA Educator Resource Center
57th Street and Lake Shore Drive
Chicago, IL 60637-2093
Phone: (773) 684-9844, Ext. 2426
FAX: (773) 684-5580
http://www.msichicago.org

Indiana
Science Central
1950 North Clinton Street
Fort Wayne, IN 46805
Phone: (219) 424-2400, Ext. 416
FAX: (219) 422-2899
http://www.sciencecentral.org

Iowa
Iowa Educator Resource Center
Western Hills Area Education Agency 12
1520 Morningside Avenue
Sioux City, IA 51106
Phone: (712) 274-6000, Ext. 6072
Phone: (800) 352-9040, Ext. 6072
FAX: (712) 274-6069
http://www.aea12.k12.ia.us/rerc

Kansas
Kansas Cosmosphere and Space Center
NASA Educator Resource Center
1100 North Plum
Hutchinson, KS 67501-1499
Phone: (316) 662-2305, Ext. 353
Phone: (800) 397-0330, Ext. 360
FAX: (316) 662-3693
http://www.cosmo.org

Kentucky
NASA Educator Resource Center
Murray State University
107 Waterfield Library
Murray, KY 42071-3307
Phone: (270) 762-2850 or 762-4420
FAX: (270) 762-3736
http://www.murraystate.edu/msml/nasa/nasacenter.html

Louisiana
Louisiana Tech University
NASA Educator Resource Center
Woodard Hall, Wisteria Street
Ruston, LA 71270
Phone: (318) 257-2794
FAX: (318) 257-2957

Maryland
NASA Goddard Space Flight Center
NASA Educator Resource Center
Mail Code 130.3
Greenbelt, MD 20771
Phone: (301) 286-8570
FAX: (301) 286-1781
http://www.gsfc.nasa.gov/vc/erc.htm

Massachusetts
Bridgewater State College
Maxwell Library
Media Service
Bridgewater, MA 02325
Phone: (508) 531-2022
FAX: (508) 531-1729
http://www.bridgew.edu/depts/mediasrv/index.htm#nasa_center

Michigan
Central Michigan University
SMTC NASA-RERC
101 Ronan Hall
Mount Pleasant, MI 48859
Phone: (517) 774-4387
FAX: (517) 774-2188
http://www.smtc.cmich.edu

Northern Michigan University
The Glenn T. Seaborg Center for Teaching and Learning Science and Mathematics
1401 Presque Isle
Marquette, MI 49855-5394
Phone: (906) 227-2002
FAX: (906) 227-2013
http://seaborg.nmu.edu/

Oakland Schools Science, Mathematics, and Technology Center
1480 Scott Lake Road
Waterford, MI 48328
Phone: (248) 209-2394
FAX: (248) 209-2390

Minnesota
Minnesota State University at Mankato
NASA RERC
Box 52, Armstrong Hall
Mankato, MN 56002-8400
Phone: (507) 389-5711
FAX: (507) 389-5853
http://www.mankato.msus.edu/

St. Cloud State University
Center for Information Media
720 Fourth Avenue SCH-29
St. Cloud, MN 56301-4498
Phone: (320) 255-4766
FAX: (320) 255-4478

Mississippi
Jackson State University
Joseph E. Jackson School of Education
1400 J.R. Lynch Street, Room 212
Jackson, MS 39217-0195
Phone: (601) 979-2433 or 979-2432
FAX: (601) 979-7048

Mississippi Band of Choctaw Indians
Choctaw Tribal Schools
150 Recreation Road
Philadelphia, MS 39350
Phone: (601) 656-0765
FAX: (601) 656-9735

Stennis Space Center
NASA Educator Resource Center
Building 1200
Stennis Space Center, MS 39529-6000
Phone: (228) 688-3338
FAX: (228) 688-2824
http://education.ssc.nasa.gov/erc/erc.htm

Missouri
Southeast Missouri State University
NASA ERC
1 University Plaza MS 0100
222 North Pacific Street
Cape Girardeau, MO 63701
Phone: (573) 290-5394
Phone: (877) 321-6272
FAX: (573) 290-5254
http://www2.semo.edu/nasaerc/home.htm

Montana
Western Montana College
Carson Library, NASA RERC
710 S. Atlantic
Dillon, MT 59725
Phone: (406) 683-7492
FAX: (406) 683-7493
http://www.lib.wmc.edu

Nebraska
University of Nebraska at Omaha
DSC 118
6001 Dodge Street
Omaha, NE 68182-0266
Phone: (888) 866-6272
FAX: (888) 554-3100
http://www.physics.unomaha.edu

Nevada
Community College of Southern Nevada
3200 East Cheyenne Avenue C2A
North Las Vegas, NV 89030-4296
Phone: (702) 651-4505
FAX: (702) 643-8103
http://www.ccsn.nevada.edu/planetarium/RTRC.html

New Hampshire
Christa McAuliffe Planetarium
3 Institute Drive
Concord, NH 03301
Phone: (603) 271-7831, Ext. 36
FAX: (603) 271-7832
http://www.starhop.com

New Jersey
NASA ERC
Sister Mary Joseph Cunningham Library
Georgian Court College
900 Lakewood Avenue
Lakewood, NJ 08701-2697
Phone: (732) 364-2200, Ext. 436
FAX: (732) 364-2215
http://www.georgian.edu/nasa/

New Mexico
NASA Educator Resource Center
New Mexico State University
Learning Resource Center
MSC 3LRC Box 30001
O'Donnell Hall, Room 310
Las Cruces, NM 88003-8001
Phone: (505) 646-2513
http://nasanm.nmsu.edu

New York
NASA Educator Resource Center Network
City College of New York
NAC 5/302 in Cohen Library
138th Street and Convent Avenue
New York, NY 10031
Phone: (212) 650-6993
FAX: (212) 650-6819
http://www.ccny.cuny.edu/

North Carolina
University of North Carolina at Charlotte
NASA Educator Resource Center
CIMC, Atkins Library
9201 University City Boulevard
Charlotte, NC 28223
Phone: (704) 687-2559
FAX: (704) 687-2232
http://libweb.uncc.edu/nasa/

North Dakota
Regional Educator Resource Center
University of North Dakota
Department of Space Studies
513 Clifford Hall, 4149 Campus Road
Grand Forks, ND 58202-9008
Phone: (701) 777-4856
FAX: (701) 777-3711

Ohio
NASA Glenn Research Center
NASA Educator Resource Center
21000 Brookpark Road, MS 8-1
Cleveland, OH 44135
Phone: (216) 433-2017
FAX: (216) 433-3601
http://www.grc.nasa.gov/WWW/PAO/html/edteachr.htm

University of Cincinnati
Curriculum Resources Center
600 Blegen Library
Cincinnati, OH 45221-0219
Phone: (513) 556-1430
FAX: (513) 556-2122

Eisenhower National Clearinghouse
1929 Kenny Road
Columbus, OH 43210-1079
Phone: (614) 292-8389
FAX: (614) 292-2066
http://www.enc.org

Oklahoma
NASA Aerospace Professional Development Center
206 North USDA Building
Oklahoma State University
Stillwater, OK 74078-8089
Phone: (405) 744-6784
FAX: (405) 744-6785
http://www.okstate.edu/apdc

Oregon
Oregon Museum of Science and Industry
NASA RERC
1945 SE Water Avenue
Portland, OR 97214
Phone: (503) 797-4551
FAX: (503) 797-4500
http://www.omsi.edu/teachers/nasa/

Pennsylvania
University of Pittsburgh NASA RERC
4H17 Posvar Hall
230 South Bouquet Street
Pittsburgh, PA 15260
Phone: (412) 648-7558
FAX: (412) 648-7081
http://www.pitt.edu/~nasa

Puerto Rico
University of Puerto Rico at Mayaguez
Resource Center for Science and Engineering
Physics Building, Office 231
Mayaguez, PR 00680
Phone: (787) 831-1022 or 831-1025
FAX: (787) 832-4680
http://shuttle.uprm.edu/prrerc/

Rhode Island
Rhode Island College
Physical Science Department
600 Mount Pleasant Avenue
Providence, RI 02908
Phone: (401) 456-9638
FAX: (401) 456-9658

South Carolina
Stanback Planetarium
South Carolina State University
300 College Street, Box 7636
Orangeburg, SC 29117-7636
Phone: (803) 536-8709 or 536-8711
FAX: (803) 536-8309
http://www.draco.scsu.edu

South Dakota
Center for the Advancement of Math and Science Education
Black Hills State University
1200 University
Spearfish, SD 57799-9005
Phone: (605) 642-6874
FAX: (605) 642-6871

Washington Pavilion of Arts and Science
Kirby Science Discovery Center
301 South Main Avenue
Sioux Falls, SD 57101-0984
Phone: (605) 367-7397, Ext. 2374
FAX: (605) 367-7399
http://www.washingtonpavilion.org

Tennessee
University of Tennessee at Martin
Center of Excellence for Science/Math Education
145 Gooch Hall
Martin, TN 38238
Phone: (731) 587-7907
FAX: (731) 587-7206
http://cesme.utm.edu/resources/NASA/ERC.html

Texas
NASA Educator Resource Center for
NASA Johnson Space Center
Space Center Houston
1601 NASA Road One
Houston, TX 77058
Phone: (281) 244-2129
FAX: (281) 483-9638
http://www.spacecenter.org/educator_resource.html

University of Texas at Brownsville/TSC Library
NASA Educator Resource Center
80 Fort Brown
Brownsville, TX 78520
Phone: (956) 982-0295 or (956) 544-8220
FAX: (956) 544-5495

Utah
Utah State University
Adele and Dale Young Education Technology Center
2845 Old Main Hill
170 Education Building
Logan, UT 84322-2845
Phone: (435) 797-3377
FAX: (435) 797-3939
http://teacherlink.ed.usu.edu

Weber State University
NASA ERC LL230
2509 University Circle
Ogden, UT 84408-2509
Phone: (801) 626-6590
FAX: (801) 626-7257
http://catsis.weber.edu/sciencecenter

Virginia
NASA Educator Resource Center for
NASA Langley Research Center
Virginia Air and Space Center
600 Settlers Landing Road
Hampton, VA 23669-4033
Phone: (757) 727-0900, Ext. 757
FAX: (757) 727-0898
http://www.vasc.org/erc/

NASA Goddard Space Flight Center / Wallops Flight Facility
NASA Educator Resource Center
Building J-17
Wallops Island, VA 23337
Phone: (757) 824-2298
FAX: (757) 824-1776
http://www.wff.nasa.gov/~WVC/Educator%20Resource%20Center.htm

Radford University
NASA Educator Resource Center
Walker Hall, Box 6999
Radford, VA 24142
Phone: (540) 831-6284
FAX: (540) 831-5807
http://www.radford.edu/~trc/

Washington
NASA Regional Educator Resource Center
University of Washington
Space Grant Program
401 Johnson, Box 351650
Seattle, WA 98195-1650
Phone: (206) 543-1943
FAX: (206) 543-0179
http://www.waspacegrant.org

West Virginia
University of Charleston
125 Riggleman Hall
2300 MacCorkle Avenue SE
Charleston, WV 25304
Phone: (304) 357-4791
FAX: (304) 357-4715

Wheeling Jesuit University
Classroom of the Future
316 Washington Avenue
Wheeling, WV 26003
Phone: (304) 243-4416
FAX: (304) 243-2497
http://www.cotf.edu/erc

West Virginia University
NASA Independent Verification and Validation (IV and V) Facility
100 University Drive
Fairmont, WV 26554
Phone: (304) 367-8436
FAX: (304) 367-8411

Wisconsin
The University of Wisconsin—La Crosse
NASA / Science Center, School of Education
Morris Hall, Room 140
La Crosse, WI 54601
Phone (608) 785-8148
FAX (608) 785-8128
http://www.uwlax.edu/NASA

Wyoming
University of Wyoming
Learning Resource Center
Education Building, Room 222
Laramie, WY 82070
Phone: (307) 766-2527
FAX: (307) 766-2018
http://www.uwyo.edu

NASA's Education Home Page serves as a cyber gateway to information regarding educational programs and services offered by NASA for the American education community. This high-level directory of information provides specific details and points of contact for all of NASA's educational efforts, Field Center offices, and points of presence within each State. Visit this resource at the following address: *http://education.nasa.gov*

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Check the Internet for program listings at: *http://www.nasa.gov/ntv*
For more information on NTV, contact:
NASA TV
NASA Headquarters—Code P-2
Washington, DC 20546-0001
Phone: (202) 358-3572

NTV Weekday Programming Schedules (Eastern Times)

Video File	NASA Gallery	Education File
12–1 p.m.	1–2 p.m.	2–3 p.m.
3–4 p.m.	4–5 p.m.	5–6 p.m
6–7 p.m.	7–8 p.m.	8–9 p.m.
9–10 p.m.	10–11 p.m.	11–12 p.m.
12–1 a.m.	1–2 a.m.	2–3 a.m.

How to Access Information on NASA's Education Program, Materials, and Services (EP-2000-09-345-HQ).
This brochure serves as a guide to accessing a variety of NASA materials and services for educators. Copies are available through the ERC network, or electronically via NASA Spacelink. An electronic version of this brochure can be accessed at: *http://spacelink.nasa.gov/products/Accessing.NASA.Education.Brochure*

NASA Quest offers live and archived multimedia Web experiences. NASA Quest incorporates e-mail, chat rooms, audio, video, synchronized graphics, and sometimes NASA Television to offer participants workshops, lectures, seminars, courses, and exciting live events from around the world.

These events allow participants to come and go as dictated by their own individual and classroom needs. To get involved, simply select your area of interest or take a look at the calendar of events. NASA Quest can be accessed at *http://quest.nasa.gov*

FORMAT KEY:
C=CD-ROM, D=DVD, M=MEMORABILIA, P=PUBLICATION
S=SLIDE, V=VIDEOTAPE

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Astrosmiles (7–Adult)	V	006.3-05V	1986	44
ATLAS 1: Studying Mysteries in Earth's Atmosphere (6–8)	S	100.0-38		7, 110
Balloon Helicopter	M	300.0-30		120
Best of the Space Shuttle 1977–1984 (4–12)	S	100.0-20	1984	35, 110
BioBLAST (9–12)	V	003.1-11V	1999	40
BioBLAST (9–12)	C	400.1-26W	1999	39, 90
Biology and Space Exploration (Undergrad/Grad)	V	099.98V		40
BLACKOUT! Solar Storms and Their Effects on Planet Earth (5–Adult)	V	010.2-05V	1999	74
Blue Planet (4–Adult)	V	002.2-15V	1990	7
Car and Track	M	300.0-26		120
Cardiovascular System in Space, The (Undergrad/Grad)	V	003.1-06V	1994	40
Chandra X-Ray Observatory (5–12)	C	400.1-35	2001	64, 91
Collection of Magellan Venus Radar Mapping Results	V	010.2.3-02V	1992	89
Colors of the Sun (5–8)	V	010.2.8-05V	2000	86
Comet Halley Returns (11–Adult)	V	010.0-01V	1986	64
Comet Impact '94	S	100.0-46	1994	64, 79, 110
CRATERS! A Multi-Science Approach to Cratering and Impacts (9–12)	P	010.3-03P	1995	83
Deep Space: Featuring the Hubble Space Telescope Images	C	400.0-83	1997	64, 91
Destination Mars (4–10)	V	010.2.4-09V	1997	80
DESTINATION TOMORROW: Bringing the Future into Focus (9–Adult)	V	099.35V	2000	61
Program 1: DESTINATION TOMORROW (9–Adult)	V	099.35-01V	2000	61
Program 2: DESTINATION TOMORROW (9–Adult)	V	099.35-02V	2001	61
Program 3: DESTINATION TOMORROW (9–Adult)	V	099.35-03V	2001	61
Program 4: DESTINATION TOMORROW (9–Adult)	V	099.35-04V	2001	61
Program 5: DESTINATION TOMORROW (9–Adult)	V	099.35-05V	2001	61
Die-Cast Metal Shuttle Pencil Sharpener	M	300.0-16		120
Dream is Alive, The (4–Adult)	V	007.6-22V	1985	35
Dynamic Sun, The (K–12)	C	400.0-94	2001	86, 91
Earth Observatorium: Mission to Planet Earth (K–Adult)	C	400.0-77	1996	7, 92
Earth Observing System	S	100.0-42		7, 110
Earth Playing Cards	M	300.0-35		120
Earth Science Elementary Publication Packet (K–3)	P	002.2-19P		8, 106
Earth Science Middle School/Secondary Publication Packet (5–12)	P	002.2-20P		8, 106
Earth-to-Orbit Engineering Design Challenges (Supervision)		300.0-41A		118
Earth-to-Orbit Engineering Design Challenges (Supervision)		300.0-41B		118
Earth-to-Orbit Engineering Design Challenges: Thermal Protection Systems (5–12)	V	012.0-26V	2001	57
Earth/Space Science Slide Set for Educators (9–Adult)	S	100.0-47		8, 110
Earthlight: Special Edition	D	002.2-25D	1998	8, 103
Earthview	S	100.0-29		8, 111
Eating and Sleeping in Space (4–12)	V	006.3-03V	1985	44
Eating and Sleeping in Space (4–12)	V	006.3-04V	1985	44
Engineers: Turning Ideas Into Reality (9–Adult)	V	004.0-06V	1990	5
ExoQuest (7–9)	C	400.1-36A	2001	92
Expanding the Universe	S	100.0-78	1997	111

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Expanding the Universe with the Hubble Space Telescope II	S	100.0-58		111
Expanding the Universe with the Hubble Space Telescope V	S	100.0-60		111
Expanding the Universe with the Hubble Space Telescope VI	S	100.0-61		111
Expanding the Universe with the Hubble Space Telescope VIII	S	100.0-71	1996	111
Expanding the Universe with the Hubble Space Telescope IX	S	100.0-72	1996	111
Expanding the Universe with the Hubble Space Telescope X	S	100.0-73	1996	111
Expanding the Universe with the Hubble Space Telescope XI	S	100.0-74	1997	111
Expanding the Universe with the Hubble Space Telescope XII	S	100.0-75	1997	111
Expanding the Universe with the Hubble Space Telescope XIV	S	100.0-77	1997	112
Exploration of Venus	S	100.0-44		112
Exploring Aeronautics (5–8)	C	400.0-91	1998	20, 92
Exploring Meteorite Mysteries	S	100.0-66		69, 112
Exploring the Internet	C	400.0-81	1997	92
Flight of Apollo 11—The Eagle Has Landed (7–12)	V	099.01-10V	1969	30
Flight Testing Newton's Laws (9–12)	V	012.0-25V	1999	57
Flying Machines (9–Adult)	V	001.0-04V	1978	21
Flying Machines (9–Adult)	V	001.0-05V	1978	21
Fragile Earth	S	100.0-26		9, 112
Freedom 7—The NASA Mission Reports (9–Adult)	C	400.2-16	2001	100, 106
Friendship 7—The NASA Mission Reports (9–Adult)	C	400.2-03	1999	34, 100, 106
Full Earth	S	100.0-30		9, 112
Full-Stack Space Shuttle Pencil Sharpener	M	300.0-12		120
Galileo Mission at Jupiter: Volume 2	S	100.0-79		79, 112
Galileo Mission at Jupiter: Volume 3	S	100.0-80		79, 112
Galileo Mission to Jupiter	S	100.0-55		79, 113
Gate to Gate (9–College)	C	400.1-32	2001	5, 21, 92
Gemini 6—The NASA Mission Reports (9–Adult)	C	400.2-08	1999	31, 100, 107
Geomorphology from Space: A Global Overview of Regional Landforms (9–Adult)	C	400.0-87	1986	9, 93
Glacier Bay, Alaska from the Ground, Air, and Space (5–12)	V	002.2-16V	1996	9
Glacier Power (4–6)	C	400.0-89	1997	9, 93
GLOBE Program, The (Teacher)	V	002.2-17V	1996	9
Go for Assembly: Building the International Space Station (7–12)	V	006.4-07V	1997	47
Gravitron	M	300.0-29		120
Group Interactions and Crew Performance (Undergrad/Grad)	V	003.1-08V	1996	40
Gyroscope	M	300.0-25		120
High Frontier, The (9–Adult)	C	400.2-10	1999	101, 107
History of Space Travel (7–12)	V	099.01V		31
Program 1: Space Shuttle Overview	V	099.01-01V	1980	31
Program 2: Before Saturn and America in Space	V	099.01-02V	1980	31
Program 3: Astronauts . . . U.S. Project Mercury	V	099.01-03V	1960	31
Program 4: Freedom 7	V	099.01-04V	1961	31
Program 5: Friendship 7, Part I	V	099.01-05V	1962	32
Program 6: Friendship 7, Part II	V	099.01-06V	1980	32
Program 7: Your Share in Space	V	099.01-07V	1980	32
Program 8: Legacy of Gemini	V	099.01-08V	1967	32

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Program 9: Debriefing Apollo 8	V	099.01-09V	1969	32
Program 10: The Flight of Apollo 11	V	099.01-10V	1969	32
Program 11: Apollo 16, Nothing so Hidden	V	099.01-11V	1972	32
Program 12: Four Rooms Earthview	V	099.01-12V	1975	32
Program 13: The Mission of Apollo/Soyuz	V	099.01-13V	1975	32
Program 14: Teacher Silent Video Lesson Guide	V	099.01-14V	1980	32
History of Space Flight (9–Adult)	V	007.0-03V	1992	33
History of Space Flight: Reaching for the Stars (4–12)	D	007.0-05D	2001	21, 103
Hubble Library of Electronic Picture Books, The	C	400.0-70	1994	69, 93
Hubble Space Telescope, The	S	100.0-67		113
Hubble Space Telescope's Greatest Hits	S	100.0-62		64, 113
Hubble Space Telescope's Second Servicing Mission XIII	S	100.0-76	1997	113
Hubble Telescope	C	400.0-86	1997	69, 93
Hubble: The First Decade (5–12)	V	002.4-08V	2000	69
Human Space Flight: A History (7–Adult)	S	100.0-05		33, 113
Human Space Flight: Living in Space (4–12)	S	100.0-03		33, 113
Hurricane Below (7–10)	V	002.3-01V	1974	15
Images of Earth and Space II (9–Undergrad)	V	010.0-02V	1998	70
Images of Earth and Space: The Role of Visualization in NASA Science (7–12)	V	010.0-01V	1996	69
Imagine the Universe (K–8)	C	400.1-30	2000	64, 94
Inflatable Models				
Mars	M	300.0-38A		119
Stellar Globe	M	300.0-38B		119
Topographical Earth	M	300.0-38C		119
International Space Station Overview (7–12)	V	006.4-06V	1997	47
International Space Station Teleconference: Countdown to Launch (6–12)	V	006.4-08V	1998	47
International Space Station Teleconference: Open for Business (Research Specialists)	V	006.4-09V	1998	47
International Space Station Video Progress Report (7–12)	V	006.4-10V	1988	48
International Space Station: Some Assembly Required (6–12)	V	006.4-20V	1999	47
International Space Station: The Vision and Mission (5–Adult)	V	006.4-25V	2001	47
Jason: An Ocean Odyssey (6–12)	V	002.2-23V	2001	10
John Glenn Mercury Astronaut Replica w/Mercury Patch	M	300.0-33		119
Journey into Cyberspace (5–8)	V	004.0-11V	1997	5
Journey Through the Solar System (7–Adult)	V	099.02V		74
Program 1: Our Star the Sun	V	099.02-01V	1982	74
Program 2: Mercury, Exploration of a Planet	V	099.02-02V	1976	75
Program 3: Venus Pioneer	V	099.02-03V	1982	75
Program 4: Earth, The Planet	V	099.02-04V	1982	75
Program 5: Assignment . . . Shoot for the Moon	V	099.02-05V	1982	75
Program 6: The Moon and Man	V	099.02-06V	1982	75
Program 7: The Fourth Planet	V	099.02-07V	1982	75
Program 8: Life on Mars?	V	099.02-08V	1982	75
Program 9: Jupiter Odyssey	V	099.02-09V	1974	75
Program 10: A Clearer Picture	V	099.02-10V	1982	75
Program 11: Pioneer/Saturn Encounter	V	099.02-11V	1982	75
Program 12: Voyager 2/Saturn Encounter	V	099.02-12V	1982	75

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Mission Geography (K–12)	C	400.1-37	2002	18, 94
Mission STS-26: The Crew Report (5–Adult)	V	007.6-13V	1988	36
Mission to Mir	V	006.4-22V	1997	48
Mission to Mir	D	006.4-22D	1997	48
Moon: The Geologic History and Future Exploration	S	100.0-48		83, 114
Moonwalk (4–Adult)	V	099.06V		30, 83
Program 1: The Day Before (9–Adult)	V	099.06-01V	1970	30, 83
Program 2: Adapting to a Space Environment	V	099.06-02V	1970	30, 83
Program 3: One Small Step	V	099.06-03V	1970	30, 83
Program 4: The Moon on Earth	V	099.06-04V	1970	30, 83
Musculoskeletal System in Space, The (Undergrad/Grad)	V	003.1-07V	1995	41
NASA and the Airplane (9–Adult)	V	099.05V		22
Program 1: Golden Days of Flight	V	099.05-01V	1981	22
Program 2: America's Wings	V	099.05-02V	1976	22
Program 3: The 60s' Strides Toward the Future	V	099.05-03V	1984	22
Program 4: X-15 Research	V	099.05-04V	1966	22
Program 5: Quieter, Faster, and Safer Aircraft	V	099.05-05V	1984	22
Program 6: Hang Gliders, Copters, and Underwater Planes	V	099.05-06V	1984	22
Program 7: Flying Machines	V	099.05-07V	1978	22
Program 8: Looking Ahead and Back	V	099.05-08V	1984	23
Program 9: Setting the Stage for the Future	V	099.05-09V	1984	23
Program 10: Behind the Scenes at the Air and Space Museum	V	099.05-10V	1984	23
Program 11: Progress in Aeronautics	V	099.05-11V	1984	23
Program 12: The Ames Research Fleet	V	099.05-12V	1984	23
Program 13: Astounded at the Past	V	099.05-13V	1987	23
NASA Biology: On Earth and in Space (10–Adult)	V	099.07V		42
Program 1: Life in Space	V	099.07-01V	1987	42
Program 2: Gravity and Life	V	099.07-02V	1987	42
Program 3: Making Medicine in Space	V	099.07-03V	1987	42
Program 4: Earth's Air	V	099.07-04V	1987	42
Program 5: Earth's Future Climate	V	099.07-05V	1987	42
Program 6: Origins of Life on Earth	V	099.07-06V	1987	42
Program 7: Exobiology	V	099.07-07V	1987	42
Program 8: The Human Machine in Space	V	099.07-08V	1987	42
Program 9: The Viking Expeditions	V	099.07-09V	1987	42
Program 10: The Mars Panel Discussion, Part I	V	099.07-10V	1987	42
Program 11: The Mars Panel Discussion, Part II	V	099.07-11V	1987	42
Program 12: In Search of Extraterrestrial Intelligence	V	099.07-12V	1987	42
Program 13: Planning for the Future	V	099.07-13V	1987	42
Program 14: Space Policy	V	099.07-14V	1987	43
NASA CONNECT Video Series/1997–1998 (K–4)	V	099.18V	1997	23, 70
NASA CONNECT Video Series/1997–1998 (5–8)	V	099.19V	1997	23, 70
Program 1: Flight Direction				
Program 2: Planetary Landers				
Program 3: Earth from Space				
Program 4: Doing More in Less				
NASA CONNECT Video Series/1998–1999 (4–8)	V	099.20V		24
Program 1: Plane Weather	V	099.20-01V	1998	15, 24

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
NASA's Hubble Space Telescope: The Challenge and Complexity of Operations (11–Adult)	V	002.4-04V	1990	71
New Era of Discovery: Plans for Research on the Space Station	V	006.4-05V	1994	49
New Solar System, The	V	010.1-15V	1996	65
Night Sky, The	V	099.97V	1993	65
On Robot Wings: A Flight Through the Solar System	V	010.2-03V	1992	75
On the Shoulders of Giants (7–Adult)	V	007.3-03V	1973	30
Optics—Making Light Work (4–9)	V	011.0-03V	1993	63
Origin and Early Evolution of Life, The (Undergrad/Grad)	V	003.1-04V	1995	43
Our Amazing Solar System (4–12)	D	010.2-07D	2001	76, 104
Our Solar System	C	400.0-73	1995	76, 94
Our Solar System (K–4)	V	010.2-01V	1992	76
Our Water Planet from Space: NASA . . . On the Cutting Edge Videoconference (5–12)	V	002.2-21V	1998	12
Pathfinder and the Best of Mars	C	400.0-85	1997	82, 95
Physics of Toys in Space (K–12)	V	006.3-12V	1993	45, 59
Planets	S	100.0-27		114
Preparing Today for Your Tomorrow (4–8)	V	004.0-03V	1988	5
Project Mathematics! Early History of Mathematics (9–12)	V	012.0-09V	2000	52
Project Mathematics! Polynomials (9–12)	V	012.0-04V	1991	52
Project Mathematics! Similarity (9–12)	V	012.0-03V	1990	53
Project Mathematics! Sines and Cosines, Part I (9–12)	V	012.0-05V	1992	53
Project Mathematics! Sines and Cosines, Part II (9–12)	V	012.0-06V	1993	53
Project Mathematics! Sines and Cosines, Part III (9–12)	V	012.0-07V	1994	53
Project Mathematics! The Story of Pi (9–12)	V	012.0-02V	1990	54
Project Mathematics! The Theorem of Pythagoras (9–12)	V	012.0-01V	1988	54
Project Mathematics! The Tunnel of Samos (9–12)	V	012.0-08V	1995	54
Propulsion: Launch Vehicles (7–12)	S	100.0-07		114
Propulsion: Space Shuttle (4–12)	S	100.0-08		37, 114
Propulsion: Principles of Rocketry (7–12)	S	100.0-06		114
Reaching for the Stars (3–Adult)	V	004.0-09V	1993	6
Reaching for the Stars (6–12)	V	004.0-10V	1993	6
Reading the Moon's Secrets (7–12)	V	010.3-01V	1976	83
Real Reasons for Seasons, The (6–8)	P	002.2-24P	2001	12, 72, 108
Reduced Gravity Program (9–Adult)	V	001.0-12V	1990	25
Remembering Apollo 11—The 30th Anniversary Data Archive (9–Adult)	C	400.0-96	1999	84
Remote-Sensing Tutorial (College/Remote)	C	400.0-93	1999	13, 95
Return to Space (7–Adult)	V	007.6-17V	1988	37
Rockets: A Teacher's Guide w/Activities in Science, Mathematics, and Technology (K–12)	P	300.1-02P	1999	108
Salute to Apollo, A (7–12)	S	100.0-31		84, 115
Saturn Educator Guide (5–8)	P	010.2.6-02P	1999	85, 108
Saturn V Replica w/Apollo Patch	M	300.0-18		119
Science from New Worlds	S	100.0-43		115
Search for Planets Around Other Stars, The	S	100.0-68		115

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Seeing Beyond the Obvious: Understanding Perceptions in Everyday and Novel Environments (Adult)	V	008.0-07V	1990	56
SETI: The Search for Extraterrestrial Intelligence (Undergrad / Grad)	V	003.1-05V	1996	43
Shuttle Astronaut Replica w / NASA Vector Patch	M	300.0-19		119
Shuttle Life in the World of Weightlessness (4–12)	V	006.3-02V	1985	45
Shuttle-Mir: The United States and Russia Share History's Highest Stage (5–Adult)	C	400.1-38	2002	95
Shuttle: A Remarkable Flying Machine (4–Adult)	V	007.6-10V	1981	37
SIR-C / X-SAR Imaging Radar "Seeing the Earth in a New Way"	S	100.0-56		115
Skylab (9–Adult)	V	099.91V		59
Program 1: Zero-G	V	099.91-01V	1974	59
Program 2: Conservation Laws in Zero-G	V	099.91-02V	1974	59
Program 3: Fluids in Weightlessness	V	099.91-03V	1974	59
Program 4: Gyroscopes in Space	V	099.91-04V	1974	59
Program 5: Magnetism in Space	V	099.91-05V	1975	59
Program 6: Magnetic Effects in Space	V	099.91-06V	1974	59
Small Bodies, Big Impact—Cool Comets, Awesome Asteroids	V	010.1-16V	1999	66
SOHO Portfolio of Images	P	300.1-05P		86, 108
Solar System Braille Map	P	010.2-06P	2001	76, 108
Solar System Exploration (8–12)	V	010.2-04V	1992	76
Solar System Lithograph Set for Space Science (K–12)	P	300.1-03P	2001	109
Space Exploration: Communications Using Spacecraft (9–12)	S	100.0-12		115
Space Exploration: The Solar System (5–12)	S	100.0-09		76, 115
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Space Shuttle Demonstration	V	007.6-12V	1983	37
Space Shuttle Flights: 100 Stock Photos	C	400.0-84	2000	37, 95
Space Shuttle Patch	M	300.0-05S		119
Space Shuttle Replica w / Shuttle Patch	M	300.0-24		119
Space Shuttle Story, The	V	007.6-28V	1996	38
Space Shuttle STS 1–5—The NASA Mission Reports (9–Adult)	C	400.2-15	2001	37, 102
Space Shuttle Woodkit w / Decals	M	300.0-17		120
Space Voyagers: Mini Action Vehicles	M	300.0-40		119
Space Voyagers: Mini Action Vehicles	M	300.0-39		119
Spaceborne Imaging Radar—Seeing the Earth in a New Way (5–12)	C	400.0-75	1995	13, 95
Stardust—Bringing Cosmic History to Earth	V	010.1-14V	1997	67
Starfinder Series (6–10)	V	099.93V	1990	66
StarGaze: Hubble's View of the Universe	D	002.4-09D	2000	66, 104
Stars and Galaxies	S	100.0-28		66, 115
Station Reel Time (3–8)	V	006.4-11V	1999	49
Stealth Fighter Jet Pencil Sharpener	M	300.0-36		120
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Story of Our Universe, The (4–12)	S	100.0-21		77, 116
Suited for Space Videoconference (5–8)	V	006.3-09V	1991	45
Sun Splash Ozone Video (9–12)	V	002.2-18V	1997	13
Sun-Earth Day Kit (K–12)	P	002.2-22P		13, 86, 109
Supernova II (Adult)	V	010.1-09V	1988	67

TITLE (GRADE LEVEL)	FORMAT	ITEM #	DATE PRODUCED	PAGE
Ten Years of Discovery: Hubble Space Telescope	S	100.0-81		68, 116
Test Flights Beyond the Limits (7–Adult)	V	001.0-13V	1999	25
That NASA Show (3–8)	V	006.3-19V	2001	45
Those Magnificent Wind Machines (7–10)	V	005.2-01V	1980	72
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Tornado Below (7–10)	V	002.3-03V	1975	16
Toys in Space (4–8)	V	006.3-06V	1985	46, 60
Toys in Space Activity Kit	P	006.3-07P		46, 60, 118
Toys in Space II Activity Kit	P	006.3-12P		46, 60, 118
Toys in Space: Mission 51-D Highlights (4–Adult)	V	006.3-07V	1985	46, 60
Transformations of Flight (K–3)	S	100.0-32		26, 116
Transformations of Flight (K–3)	V	001.0-09V	1989	26
U.S. Microgravity Laboratory 2—Preflight Education (K–4)	V	006.3-16V	1995	46
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Ulysses: An Expedition Over the Sun's Poles (9–Adult)	V	010.2.8-03V	1995	87
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United States Geography: Appalachians, Ohio River Valley, Great Lakes (K–Adult)	S	100.0-50		19, 116
United States Geography: East Coast States, New England to Florida (K–Adult)	S	100.0-49		19, 116
United States Geography: Great Plains and Mississippi River Valley (K–Adult)	S	100.0-51		19, 116
United States Geography: Rocky Mountains and Southwest (K–Adult)	S	100.0-52		19, 117
United States Geography: United States Cities (K–Adult)	S	100.0-54		19, 117
United States Geography: West Coast States, Alaska, and Hawaii (K–Adult)	S	100.0-53		19, 117
Universe (7–11)	V	010.1-04V	1976	68
Universe (7–11)	V	010.1-05V	1976	68
Universe (7–11)	V	010.1-06V	1976	68
Universe (7–11)	V	010.1-07V	1976	68
Uranus: I Will See Such Things (9–Adult)	V	010.2.7-03V	1986	88
Views of the Solar System	C	400.0-78	1996	78, 96
Viking—Mars Landing (4–12)	S	100.0-16		82, 117
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Volcanoes of Hawaii and the Planet (9–Adult)	S	100.0-41		14, 117
Voyager 2 Encounters Saturn (4–12)	S	100.0-19		85, 117
Voyager Encounters Neptune	S	100.0-33		117
Voyager Mission to Uranus	S	100.0-64		11, 117
Voyager Uranus Encounter Parts I and II (11–Adult)	V	010.2.7-04V	1986	88
Voyager, The Grand Tour (4–12)	V	010.2-02V	1990	78
Ways of Seeing (5–8)	C	400.1-31	1999	85, 96
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